

# Dental Digest

Sixty-Sixth Year of Publication

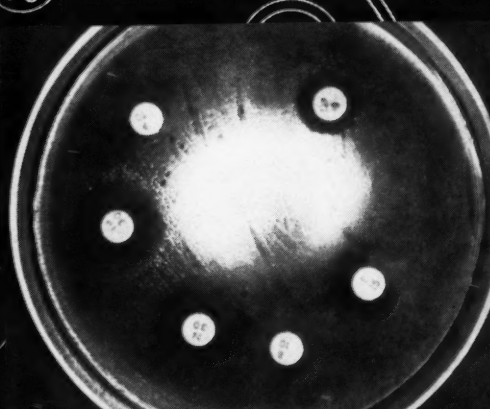
**February 1960**

## IN THIS ISSUE

g Selection by Sensitivity	
Disc-Testing of Positive Cul-	
tures: Adjunct in Endodon-	
tics .....	64
algalam Splinting for Perio-	
dental Stabilization .....	70
anical Applications of Occlu-	
sion and Articulation — Part	
Two .....	72
proved Phonetics in Artificial	
Denture Construction .....	76
Aid in Securing the Vertical	
Height of Bite-Blocks for Full	
Dentures .....	82
e Use of Wooden Wedges in	
Operative Dentistry .....	84
e Editor's Page .....	87
anical and Laboratory	
Suggestions .....	88
edicine and the Biologic	
Sciences .....	90
ntra-Angles .....	95

(A complete Table of Contents  
Appears on page 63)

Cover Illustration—Weisman  
article, page 64



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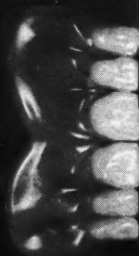
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## About Our CONTRIBUTORS

**MANUEL I. WEISMAN, D.D.S.** (Northwestern University Dental School, 1951) is a general practitioner who emphasizes endodontics. Doctor Weisman published his first full-length DIGEST article in December which he follows this month with DRUG SELECTION BY SENSITIVITY DISC-TESTING OF POSITIVE CULTURES: AN ADJUNCT IN ENDODONTICS.

**JAY W. FRIEDMAN, D.D.S.** (Columbia University School of Dental and Oral Surgery, 1948) has contributed a number of articles to dental literature. For his third article to appear in DIGEST he publishes AMALGAM SPLINTING FOR PERIODONTAL STABILIZATION.

**LEO STOLL, D.D.S.** (New York University College of Dentistry, 1931) has been interested in occlusion and articulation for many years and has made a number of original observations in these fields. In this issue appears the second installment of his seven part article, CLINICAL APPLICATIONS OF OCCLUSION AND ARTICULATION.

**LESLIE R. ALLEN, Lt. Col. USAF (DC), B.S., 1935, D.D.S.** (Marquette University, Milwaukee, Wisconsin, 1936), M.S. (Washington University School of Dentistry, 1950) is a prosthodontist and has spent more than five years in the Research Dentistry Division, at the United States Air Force School of Aviation Medicine, Randolph Air Force Base, Texas. In this issue an adaptation of Colonel Allen's article, IMPROVED PHONETICS IN ARTIFICIAL DENTURE CONSTRUCTION, which first appeared in the *United States Armed Forces Medical Journal* is presented.

**HAROLD S. JONES, D.D.S.** (University of Pennsylvania Dental School, 1918) is a general dentist who has published previously in DIGEST. His article in the current issue is AN AID IN SECURING THE VERTICAL HEIGHT OF BITE-BLOCKS FOR FULL DENTURES.

**HILLARD M. HOLMES, D.D.S.,** (University of Southern California, College of Dentistry, 1934) is engaged in general practice and publishes in DIGEST for the first time this month presenting a practical article, THE USE OF WOODEN WEDGES IN OPERATIVE DENTISTRY.

Drug Selection by Sensitivity Disc-Testing of Positive Cultures: Adjunct in Endodontics <i>Manuel I. Weisman, D.D.S.</i>	64
Host Resistance to Cancer (An Abstract)	69
Amalgam Splinting for Periodontal Stabilization <i>Jay W. Friedman, D.D.S.</i>	70
Clinical Applications of Occlusion and Articulation—Part Two <i>Leo Stoll, D.D.S.</i>	72
Improved Phonetics in Artificial Denture Construction <i>Leslie R. Allen, Lieutenant Colonel, USAF (D.C.)</i>	76
Surgical Collapse During and After Corticosteroid Therapy (An Abstract)	81
An Aid in Securing the Vertical Height of Bite-Blocks for Full Dentures <i>Harold S. Jones, D.D.S.</i>	82
Cancer of Tongue: 100 Cases (An Abstract)	83
The Use of Wooden Wedges in Operative Dentistry <i>H. M. Holmes, D.D.S.</i>	84
Science and Human Values (An Abstract)	86
The Editor's Page	87
Clinical and Laboratory Suggestions	88
1. Coloring Plaster. 2. Removal of Copper Band Impression. 3. Acrylic Trays. 4. Adding a Tooth to a Partial Denture. 5. An Impression Tray for Immediate Denture. 6. Prevent Slipping of Motor Foot Control.	
Medicine and the Biologic Sciences	90
Temporal Arteritis (An Abstract)	94
Contra-Angles	95

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## DRUG SELECTION

### ***By Sensitivity Disc-Testing of Positive Cultures: An Adjunct in Endodontics***

MANUEL I. WEISMAN, D.D.S., Augusta, Georgia

#### **DIGEST**

*One of the aims in endodontics has been to find the most satisfactory agent to render root canals sterile after biomechanical cleansing procedures. Antibiotics, singly and in combination, have recently been more generally used. This article describes a sensitivity disc test that takes a positive culture and aids in the selection of a drug for each individual case.*

#### **Methods Used**

The ideal method to determine the appropriate drug is to determine the kind of organisms present, and then determine the most effective chemotherapeutic substance to combat the organism.<sup>1</sup> Clinically, to determine the exact distribution of all the organisms found in every positive culture

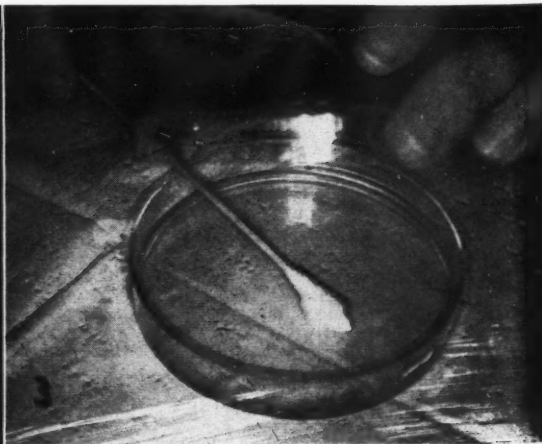
would be impractical in the modern dental office.

*Useful Clinical Adjunct*—It is a comparatively simple procedure, however, to determine the sensitivity reaction of a positive culture with any number of antibiotics by the sensitivity disc test. This method of drug determination has been used extensively in the fields of medicine and microbiology and it appears to be ex-

Author's Note: Sensi-disc Dispenser® can be obtained from the Baltimore Biological Laboratory, Inc.

<sup>1</sup>Welch, H., and Braley, A. E.: Principles and Practice of Antibiotic Therapy, New York, Blakiston Company, 1954, p. 672.

- 1.**  
*A positive root canal culture.*
- 2.**  
*Sterile swab in positive culture.*
- 3.**  
*Streaking the culture plate with a swab.*





tremely useful as an adjunctive procedure in clinical endodontics.<sup>2</sup>

**Aid in Selection of Drug**—Blechman,<sup>3</sup> refers to streaking a culture plate, which has been inoculated with a positive culture with antibiotic paper points, to aid in obtaining bacterial sensitivity information. The disc method is a more consistent, accurate, and easier method to perform. The antibiotic sensitivity test is strictly a *qualitative* laboratory aid in the selection of the drug sensitive to organisms in a positive culture.

### Laboratory Procedure

1. The root canal culture is taken from the canal (with the rubber dam



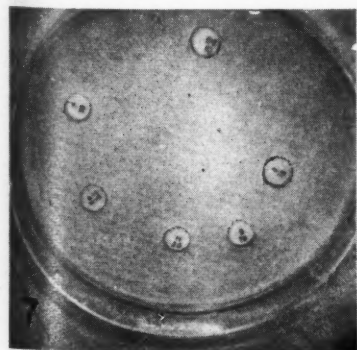
4. The placement of individual discs by hand.



5. Top view of the Sensi-disc Dispenser®

6. Sensi-disc Dispenser in use.

7. Discs in place on agar plate.



in place) with accepted sterile procedures. If an antibiotic has been sealed in previously<sup>4,5</sup> the canal should be dried with at least four successive paper points.

2. The culture is incubated from two to four days, at 37° centigrade (98.6 Fahrenheit). If the culture is found to be positive (Fig. 1), the culture is streaked with a sterile cotton swab over the face of a petri dish that has been previously poured with Brain Heart Infusion Agar or Trypticase Soy Agar (Figs. 2 and 3).

3. A number of paper discs containing specified amounts of antibiotics are placed on the plate. These discs can be placed either by hand with sterile forceps (Fig. 4) or by a convenient inexpensive Sensi-disc

Dispenser® (Figs. 5 and 6). Figure 7 shows a plate with discs placed upon it.

4. The plate is covered and placed in the incubator from one to two days at 37° centigrade (98.6 Fahrenheit).

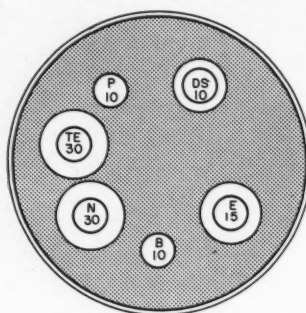
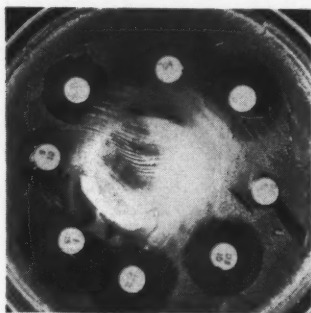
5. After incubation clear zones of inhibition will occur among those discs containing drugs which are sensitive to the organisms present (Figs. 8, 9, 10, 11). (The light area in the center is a photographic light reflec-

<sup>2</sup>Spaulding, E. H., and Anderson, T. J.: Laboratory Means for Drug Selection with the Use of Antibiotics, JAMA 147:1336-1340 (December) 1951.

<sup>3</sup>Blechman, Harry: Bacteriology in Endodontic Treatment, Philadelphia, W. B. Saunders Company, Dental Clinics of North America (November) 1957, p. 852.

<sup>4</sup>Sommer, R. F.; Ostrander, F. D.; and Crowley, M. C.: Clinical Endodontics, Philadelphia, W. B. Saunders Company, 1956, pp. 228, 232.

<sup>5</sup>Grossman, L. I.; Parris, L.; and Cobe, H.: Antibacterial Effect of Residual Bacitracin During Culturing from Root Canals, Oral Surg., Oral Med., and Oral Path., 10:426-9 (April) 1957.



### Key to Figure 8

Organisms are sensitive to the following drugs in this case:

Code:

DS—Dihydrostreptomycin

P—Penicillin

E—Erythromycin

B—Bacitracin

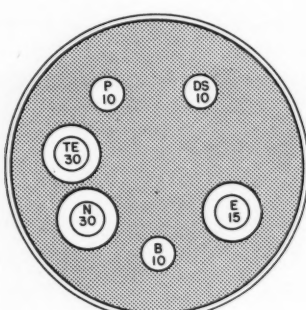
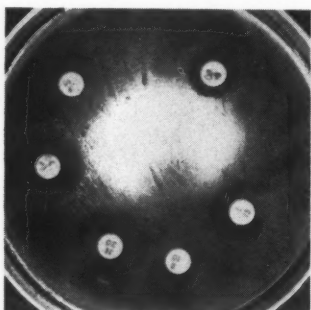
Va—Vacomycin

C—Chloromycetin

N—Neomycin

Organisms are resistant to Te-Tetracycline.

(Numbers on discs refer to concentration of drug.)



### Key to Figure 9

Organisms are sensitive to the following drugs in this case:

Code:

N—Neomycin

Te—Tetracycline

DS—Dihydrostreptomycin

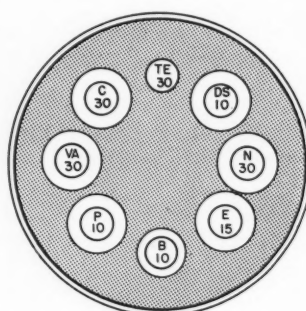
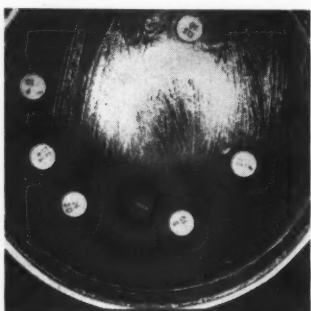
E—Erythromycin

Organisms are resistant to

P—Penicillin

B—Bacitracin

(Numbers on discs refer to concentration of drug.)



### Key to Figure 10

Organisms are sensitive to the following drugs in this case:

Code:

E—Erythromycin

N—Neomycin

Te—Tetracycline

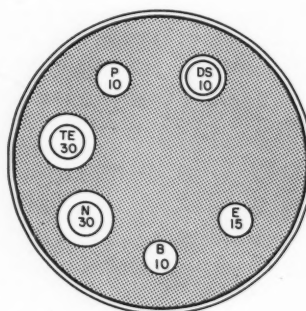
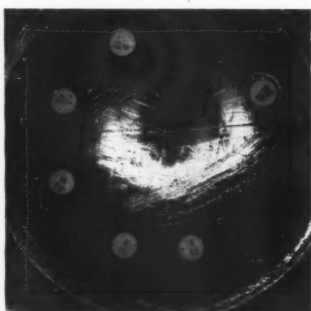
Organisms are resistant to

B—Bacitracin

P—Penicillin

DS—Dihydrostreptomycin

(Numbers on discs refer to concentration of drug.)



### Key to Figure 11

Organisms are sensitive to the following drugs in this case:

Code:

DS—Dihydrostreptomycin

N—Neomycin

Te—Tetracycline

Organisms are resistant to

P—Penicillin

E—Erythromycin

B—Bacitracin

(Numbers on discs refer to concentration of drug.)

8. In this case organisms are sensitive to the following drugs: DS-Dihydrostreptomycin. P-Penicillin. E-Erythromycin. B-Bacitracin. Va-Vancomycin. C-Chloromycetin. N-Neomycin. Organisms are resistant to Te-Tetracycline. (The numbers on the discs refer to the concentration of the drug.)

9. In this case organisms are sensitive to the following drugs: N-Neomycin. Te-Tetracycline. DS-Dihydrostreptomycin. E-Erythromycin. Organisms are resistant to P-Penicillin. B-Bacitracin. (The numbers on the discs refer to the concentration of the drug.)

10. In this case organisms are sensitive to the following drugs: E-Erythromycin. N-Neomycin. Te-Tetracycline. Organisms are resistant to B-Bacitracin. P-Penicillin. DS-Dihydrostreptomycin. (The numbers on the discs refer to the concentration of the drug.)

11. In this case organisms are sensitive to the following drugs: DS-Dihydrostreptomycin. N-Neomycin. Te-Tetracycline. Organisms are resistant to P-Penicillin. E-Erythromycin. B-Bacitracin. (The numbers on the discs refer to the concentration of the drugs.)

tion and is not significant.) These four cases represent four different positive individual cultures. It is evident that the use of the same drug or drugs for every case will not destroy the bacterial flora. Hence, this test is definitely useful.

6. At the following visit any of the drugs shown with a marked sensitivity zone can be used in the canal.

7. Any group of antibiotic substances may be employed if they can be easily used in the canal and do no harm. A group of drugs such as penicillin, dihydrostreptomycin, bacitracin, tetracycline, neomycin, vancomycin, and erythromycin, are a well-rounded series. When using such drugs in the canal they can be mixed with sterile water, camphorated parachlorophenol, or lidocaine ointment, on a sterile slab.<sup>6</sup> The author prefers camphorated parachlorophenol as a vehicle with the antibiotic since the camphorated parachlorophenol is also effective against yeasts. Occasionally no zones of inhibitions appear around the discs. This usually indicates the presence of yeasts. In that case parachlorophenol (camphorated) or

beechwood cresote can be used with excellent results.

### Routine in Laboratory Procedure

A. The positive culture should be shaken in the test tube prior to smearing to get the best distribution of flora on the plate.

B. The discs can be obtained from any biological supply house or from a drug manufacturing company (Figs. 12, 13, and 14). They are all uniformly coded, but come in high and low concentrations. On mixed cultures such as are generally found in root canals the high concentration discs seem to be satisfactory. All the discs on the same plate must be either the high or the low concentration.

C. The positive culture should be as fresh as possible.

D. The agar plates, as well as the culture broth, can be made in any dental office with dehydrated media obtained from any major biological

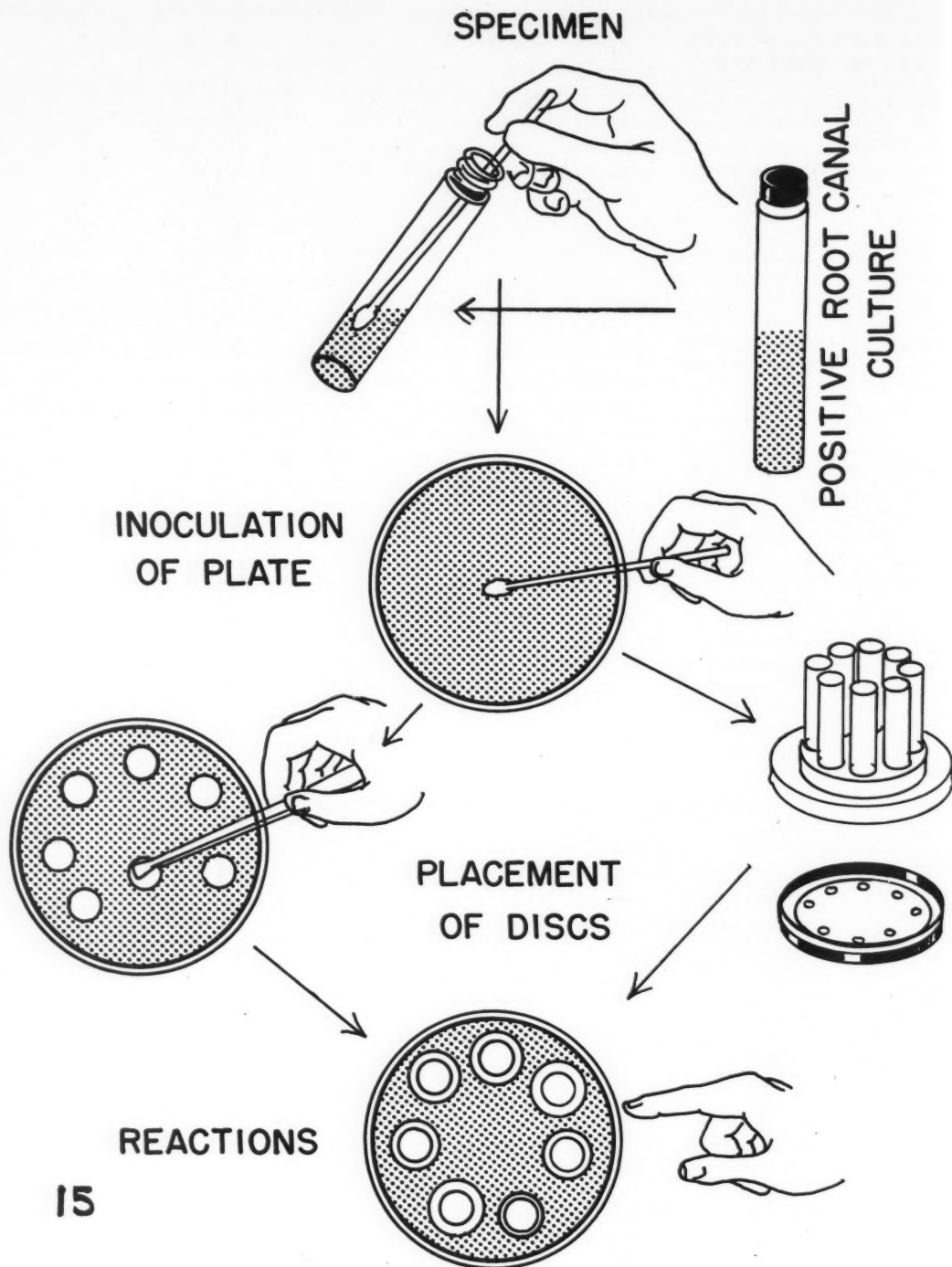
<sup>6</sup>Stewart, Geo. E.: Rational Root Canal Medication, Philadelphia, W. B. Saunders Company, Dental Clinics of North America (November) 1957, p. 831.



12. Discs are supplied in bulk form by drug companies.

13. Cartridges of discs for the dispenser.

14. Discs supplied in cartridge form by the drug company for the Sensi-disc Dispenser®.



# 15.

*A diagrammatic representation of the entire technique.*

supply house. Only an autoclave is essential in addition to petri dishes, and test tubes.

E. All manipulations must be performed according to basic bacterio-

logic technique to prevent contamination. The time necessary to perform this test is less than two minutes. The assistant can be taught to perform the test and prepare the ingredients.

## Summary and Conclusions

In modern endodontics medication is continued until one or two negative cultures are obtained. Rotation of specific drugs is recommended to aid



in the elimination of the bacterial flora,<sup>7</sup> or antibiotics may be used singly<sup>8</sup> or in combination, such as PBSC.<sup>9</sup> All of these methods have demonstrated merit but are somewhat empirical in their use. There is no single drug, or combination of drugs known that will be effective every time in every case. Formerly the positive cultures were thrown away after

they were viewed. The sensitivity disc test uses the positive culture as an aid in the selection of a specific drug for each individual case. This is a more logical procedure. The sensitivity disc test is a simple qualitative (not quantitative) laboratory method in drug selection. The test is an excellent adjunct in endodontics where the operator feels that the use of an additional laboratory step will help in the selection of specific antibiotic drugs.

This test is invaluable in the following situations:

1. For routine determination of the

drug sensitivity of positive cultures.

2. To select another drug in cases where the patient is allergic to the drug of choice.

3. To know in advance which drug to use in the canal where the canal is in a positive bacteriologic condition; such as in acute infections or putrescent pulps. If a specific culture is taken, knowing that it will be positive in a particular case, in a subsequent visit a more specific drug as the result of the sensitivity test can be employed.

1487½ Harper Street

<sup>7</sup>Grossman, L. I.: Root Canal Therapy, Philadelphia, Lea & Febiger, 1951, p. 236.

<sup>8</sup>Sommer, R. F.; Ostrander, F.D.; and Crowley, M.C.: Clinical Endodontics, Philadelphia, W. B. Saunders Company, 1956, pp. 199-200.

<sup>9</sup>Grossman, L. I.: Root Canal Therapy, Philadelphia, Lea & Febiger, 1951, pp. 249-250.

## Host Resistance to Cancer

ALEXANDER BRUNSCHWIG, M.D., New York

If a virus is defined as a complex molecule with at least some of the attributes of living matter, for example, ability for reproduction, reaction to injury, and adaptability, the presence of such autonomous or semi-autonomous self-perpetuating molecules within cells which cause their transformation into malignant cells requires no undue stretch of the imagination.

*Consistent with Virus Theory of Etiology for Cancer*—The effects of hormones on certain malignant cells would still not be inconsistent with the theory of virus etiology for cancer. The particular viruses could be affected by the inclusion of the hormone molecules either within themselves, or in the intracellular environment. Hormonal insensitive cancers would represent varieties of viruses adapted to nonhormonal sensitive intracellular environments.

*Defense Mechanism of Aid in Control After Surgery*—The immunologic aspects associated with the growth of cancer constitutes a specific aspect of the cancer problem that fits in well with a viral etiologic factor. Insofar as the surgeon is concerned, such defense mechanisms are of aid in controlling the microscopic nests of cancer after a malignant growth is macroscopically resected. In the clinical management of cancer patients overemphasis upon the hosts' defense mechanisms are certainly not justified.

*Complete Macroscopic Resection Required*—A fruitful field for investigation would be the enhancement of these defenses in man. At present incomplete operations for cancer cannot be condoned on the basis that the host defense mechanisms will control the remaining cancer. Sound surgical judgment must prevail in that opera-

tions must be planned and executed envisaging complete resection of macroscopic cancer.

*Explanation for Good Results Sometimes Achieved in Radical Surgery*—These observations are in line with certain research endeavors concerning host resistance to cancer that is receiving increased attention although neither novel nor new. For the moment at least it serves as a "working" explanation for good results which are sometimes achieved in the radical surgical attack upon cancer when the size of the lesion is such that even its apparent adequate removal leaves doubt in the surgeon's mind that lasting control of the disease will be obtained because of remaining microscopic nests of cancer cells.

Adapted from Editorials, *Surgery, Gynecology & Obstetrics* 105:234 (August) 1957.

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# AMALGAM SPLINTING

## for Periodontal Stabilization

JAY W. FRIEDMAN, D.D.S., Seattle, Washington

### DIGEST

*This article describes a technique for an economic means of obtaining stabilization of mobile posterior teeth. The procedure is limited to the posterior quadrants.*

### The Problem

Mobility of the posterior teeth as a result of periodontal disease is frequently encountered in general practice. The only satisfactory way to achieve lasting stability usually involves a "three-dimensional" approach; that is, the cuspid corner must be turned mesially to include at least one or possibly both incisors in an extensive fixed splint. If the bicuspid and molars only are splinted, this segment of the arch is still free to "rock" as a unit buccolingually. In the presence of pernicious habits such as bruxism, it is preferable to extend the splinting to the anterior segment of the arch to achieve "three-dimensional" stability.

**Limited Approach in Selected Cases**—The more limited approach to splinting presented in this article will achieve satisfactory results. Expensive and time-consuming inlay or crown splinting involves certain disadvantages which must not be overlooked:

(1) Resorption or gingivectomy exposes interproximal root surfaces which are extremely susceptible to caries. Splinting with gold does not protect these areas better (or less)

than amalgam and the expense is considerably greater.

(2) Since it is desirable to splint before periodontal surgery, the time and expense of gold splinting does not lend itself to facile corrective procedures. In contrast, the amalgam splint can be remade if necessary, easily, and economically.

**Amalgam Preferred Material**—Some clinicians have suggested the use of temporary self-curing acrylic splints in the manner described, with the advice that they be removed for inspection periodically. Amalgam is a superior choice of material because it is more stable and less susceptible to recurrent caries. Continuous amalgam splints are as permanent as individual amalgam restorations as long as they satisfactorily maintain arch

stability, do not fracture, and remain caries free.

### Procedural Steps

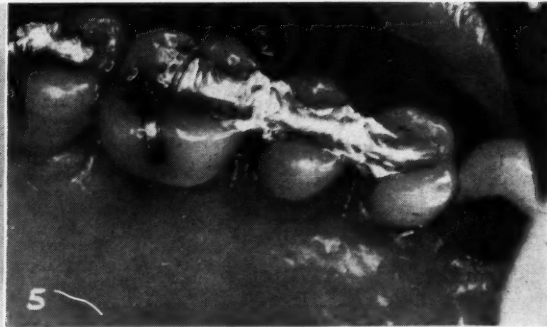
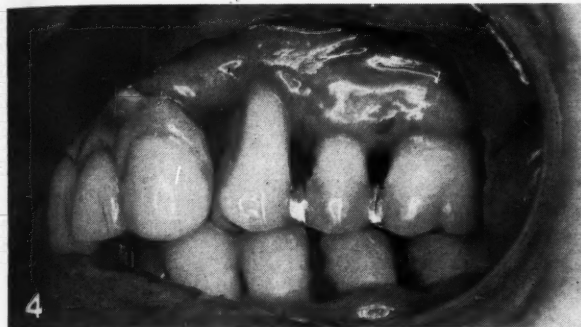
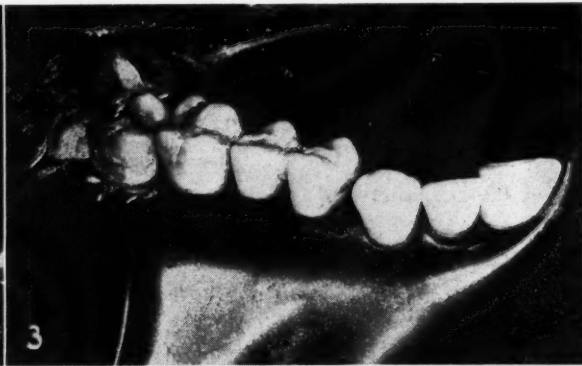
1) Cavity preparation: The bicuspid and molars as prepared to receive MOD amalgam restorations. The terminal teeth may utilize MO and DO preparations, respectively. Sufficient bulk must be obtained to prevent fracture of the amalgam mass. Adequate preventive extension is essential proximally and gingivally.

2) Gingival wood wedges are inserted interproximally and the embrasures are enclosed and reinforced with modeling compound (Fig. 1). The wood wedges are trimmed flush with the gingival floor and excess compound is removed from the proximal cavosurfaces.

3) The continuous preparations are filled to excess with well con-



**1.** Shows rubber dam applied after cavity preparation, wood wedges inserted interproximally, and modeling compound matrix formed.



## 2 and 3.

Occlusal and interproximal anatomy carved prior to removing the rubber dam. The splint is then checked for occlusal prematurities.

## 4 and 5.

The splint is still functioning satisfactorily after nine months. Note the slight marginal defects around the first bicuspid, which is, however, fairly well immobilized.

densified amalgam. After the initial set the occlusal anatomy is carved. The compound and wood wedges are removed and carving is completed (Figs. 2 and 3). The interproximal space should be maintained (Fig. 4) to allow interdental stimulation with a rubber tip.

4) Final occlusal anatomy and polishing (Fig. 5) is achieved at the next visit. Figures 4 and 5 were taken nine months after the amalgam splint was inserted.

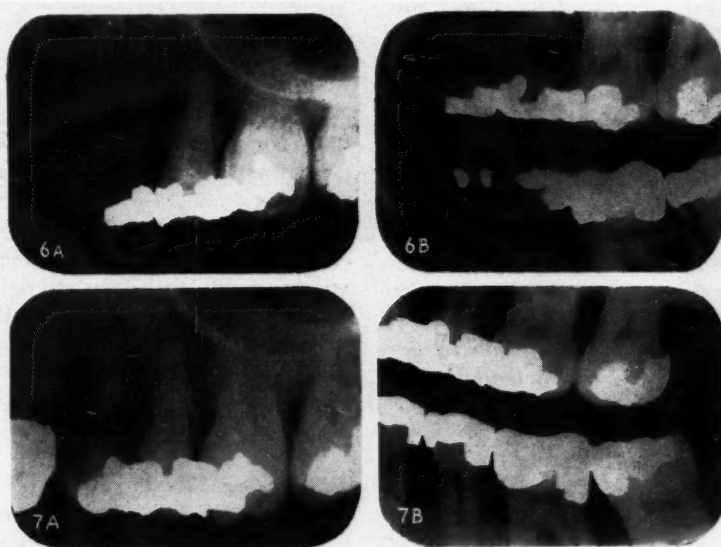
115 15th Avenue North

## 6, A and B.

Before splinting.

## 7, A and B.

Twelve months after splinting.



## **Clinical Applications**

### **of OCCLUSION and ARTICULATION - Part Two**

LEO STOLL, D.D.S., Woodmere, Long Island, New York

#### **DIGEST**

*This serial discussion is concerned with the mechanical means and technical essentials of a method for using the maxillo-mandibular relations of casts or appliances mounted on an articulator, as determined with interocclusal wax "bite" records obtained from the patient, to duplicate any of a variety of essential recorded maxillomandibular relations. The duplicated maxillomandibular relations of the mounted casts or appliances are then used as an effective substitute for the dispositions and/or movements of the mandible, as regulated by the patient's temporomandibular articulations.*

*The method of substituting maxillomandibular relations described here as an effective substitute for the mandibular movements was found to be clinically useful for the study, diagnosis, treatment planning, and execution of procedures concerned with balanced occlusion in harmony with the articulation of the jaws.*

#### **Current Methods**

Methods currently in general use for the same clinical objectives require the accurate recording and mechanical reproductions of the mandibular movements as they are regulated by the physiology of the patient's temporomandibular articulations.

**Practical Solution**—The system presented here uses the recorded maxillomandibular relations which in effect are the resultants of the mandibular

movements, as an effective substitute for the mandibular movements. An easy practical solution for the complicated clinical problem of balancing the occlusion of the teeth is supplied which will be in harmony with the patient's masticatory mechanism, as regulated by the articulation.

**Most Devices Impractical**—The few ingenious devices which most nearly supply the necessary degree of adjustability for mechanically recording and reproducing the patient's masticatory mechanism are exceedingly complicated and encumbered with complex tedious technical procedures. Clinically, these devices are highly impractical.

**Subject to Error**—These devices in common use are also subject to a great deal of error despite the scientific claims of precision made for them. For example, the mechanical apparatus required for the meticulous recording of the mandibular hinge-axis and the mandibular movements, and the exceedingly tedious and elaborate procedures required for transferring this carefully recorded information to a highly complicated adjustable device appear scientific, but in practice demonstrate serious flaws.

**Fundamental Weakness**—The gravest weakness in the chain of this so-called scientifically precise procedure occurs when the recorded mandibular hinge-axis is related to the maxillary cast on the articulator and the "centric" relation of the mandibular cast relative to the maxillary cast and the hinge-axis equivalent on the articulator is accomplished by means of an interocclusal wax bite record.

**Errors May be Formidable**: In the difficult problem of adequately stabilizing recording instruments to edentulous jaws for obtaining the necessary records errors can be formidable.

**Possible Use in Research Laboratory**: These instruments and techniques may be useful to dentistry in the research laboratory.

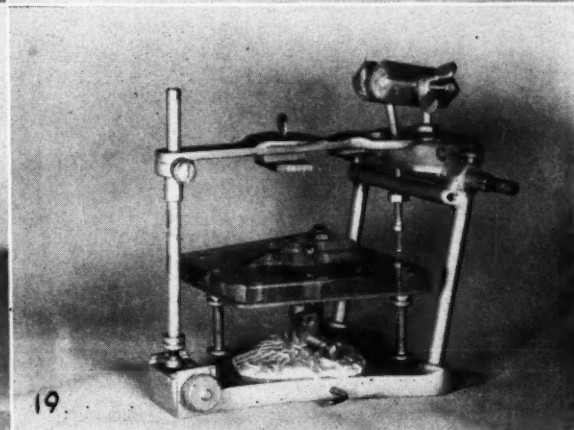
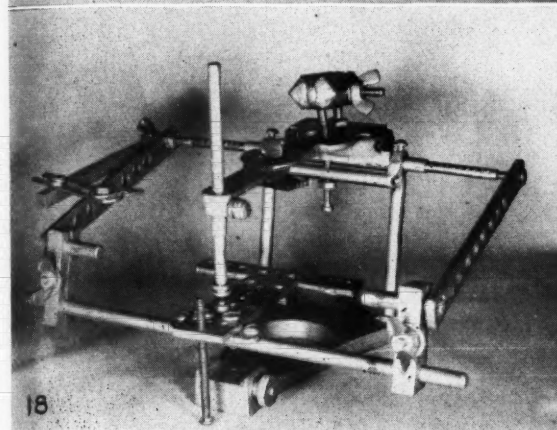
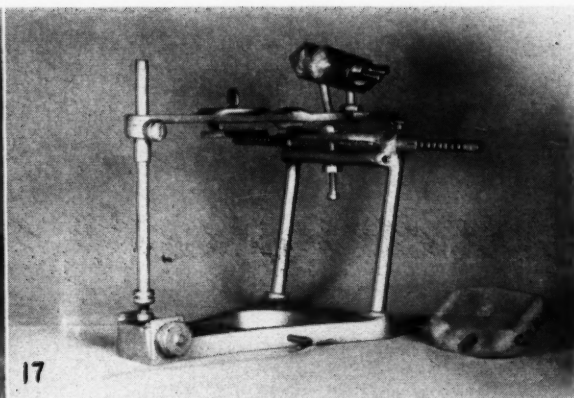
**Simpler Instruments**—Inadequacy in a number of semi-adjustable condylar instruments as well as instruments not having condylar adjustability are much simpler to use but are inadequate for the mechanical reproduction of the mandibular movements, the inadequacy being in direct proportion to the degree of adjustability of the instruments. These instruments can only reproduce with any degree of accuracy a patient's centric jaw relation and the relative disposition of the mandibular hinge-axis. Clinically, this can be accomplished with any simple hinged device, even a door hinge.

**Simple Concept Presented** — A method will be described for using a patient's maxillomandibular relations as a practical, highly efficient, and extremely simple substitute for the currently used methods employing the patient's mandibular movements, which are either too complicated mechanically or inadequate altogether.

**Basic Requirements**—Three basic technical requirements are essential for implementing the clinical application of this concept:

1. An articulator with the necessary adjustability to relate mounted casts or appliances in any of a universal variety of maxillomandibular relations, as determined with interocclusal wax bite records obtained from a patient, to duplicate the essential recorded maxillomandibular relations.





**16.**  
The articulator with its releasable adjustable elements secured in their centric relation, or starting position, as determined by the presence of the centric relation removable key. In the presence of this key properly placed on the articulator, the adjustable articulator elements can be releasably secured only in centric relation.

**17.**  
The articulator with its adjustable elements releasably secured and the centric relation key removed. With the key

removed from the articulator, the adjustable articulator elements can be releasably secured in any of a universal variety of dispositions with respect to each other and the pivotal joint of the articulator.

**18.**  
The articulator with its extendable hinge-axis rods extended to engage the mandibular hinge-axis relator.

**19.**  
The articulator with an adjustable mounting device in place.

2. A reliable technique for recording accurately the patient's maxillomandibular relations with the interocclusal wax bite records.

3. A means for relating and recording the closely approximated relative disposition of the mandibular hinge-axis on the patient for transfer to its mechanical equivalent on the articulator.

### The Articulator

It was found necessary to provide an articulator with a unique universal joint arrangement whereby the properly mounted and related casts of a patient's jaws and/or teeth or prostheses can be releasably secured in a

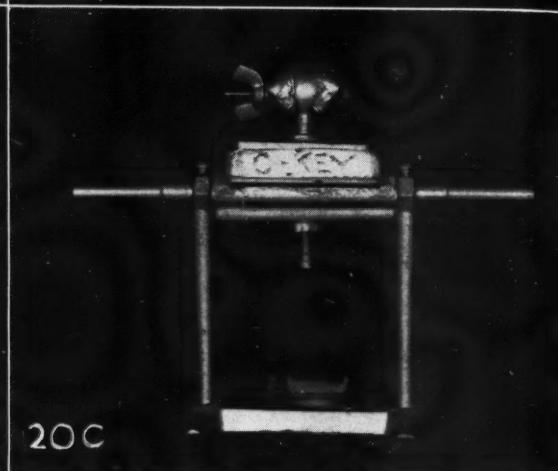
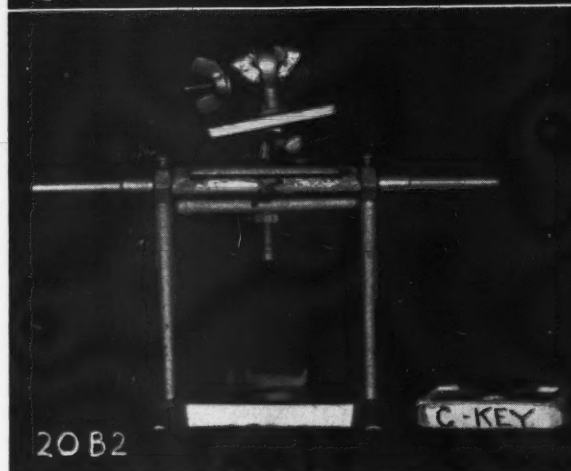
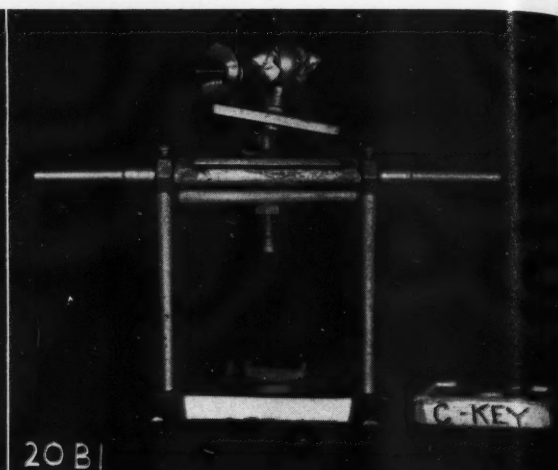
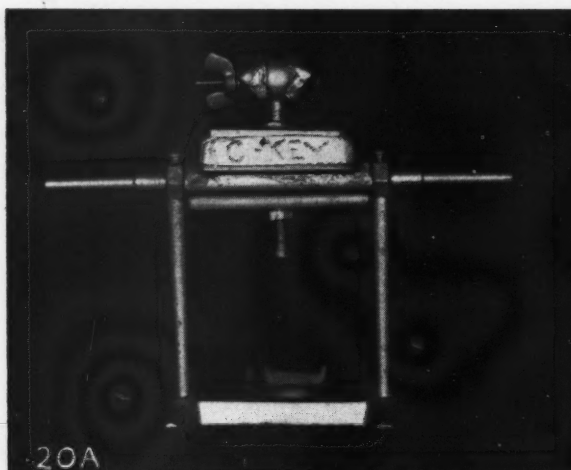
variety of pivotally connected occluded maxillomandibular relations to duplicate an essential variety of recorded maxillomandibular relations. These are determined with interocclusal wax bite records.

*Substitute for Temporomandibular Movements*—Maxillomandibular relations of the casts or appliances mounted in the articulator are used to facilitate the study, diagnosis, treatment planning, and execution of procedures concerned with balanced occlusion of the teeth and its harmony with the articulations of the jaw. The maxillomandibular relations are used as an effective substitute for the relative movements of the patient's man-

dibular movements, as regulated by the patient's temporomandibular articulations.

*Mechanical Substitute*—It was necessary to provide a means on the articulator for making removable keys for recording and using later to recover the occluded maxillomandibular relations of the attached casts or appliances. The key is an articulator record which is a mechanical substitute for the interocclusal wax bite record initially used for determining the maxillomandibular relationship of the casts or appliances mounted on the articulator.

*Useful Features of Key*—In addition to the recording and recovery



## 20A.

Rear view is shown. The upper cast holder of the articulator is releasably secured by the universal clamp in its starting centric relationship with respect to the lower cast holder and its attached pivotal joint, as determined by the centric relation key of the articulator. This is the best position from which all subsequent adjustments of the articulator can be made.

The centric relation key is shown in place on the articulator. It is an integral part of the articulator and is the mechanical means for predetermining the centric relation of the adjustable elements of the articulator. In the presence of this centric relation key properly interposed between the adjustable articulator elements, the elements can be releasably secured only in the starting centric relation.

When the universal joint clamp is unlocked, the upper cast holder can be moved away from the key and the key can be removed. Without the presence of this key, the upper cast holder can be releasably secured in any desired disposition with respect to the lower cast holder and its attached pivotal joint.

## 20B1 and 20B2.

Show two such possible releasably secured relationships. The

removable key is seen next to the articulator.

This is facilitated by the mechanical arrangement whereby the upper cast holder is capable of universal movement with respect to the lower cast holder and its attached pivotal connection (joint) and capable of being releasably secured in any desired relationship with a universal type clamp.

It should be noted, that from a practical standpoint, it makes no difference if the pivotal joint is attached to the upper cast holder instead of to the lower one, provided the axis of the pivotal joint is properly related to the mounted casts in their centric relation. Theoretically, this is debatable.

The centric relation key, previously removed, can now be used to recover the original centric relation of the adjustable articulator elements. The universal joint clamp is unlocked, releasing the upper cast holder for universal movement. The centric relation key is then properly interposed between its appropriate parts and the universal joint clamp is locked.

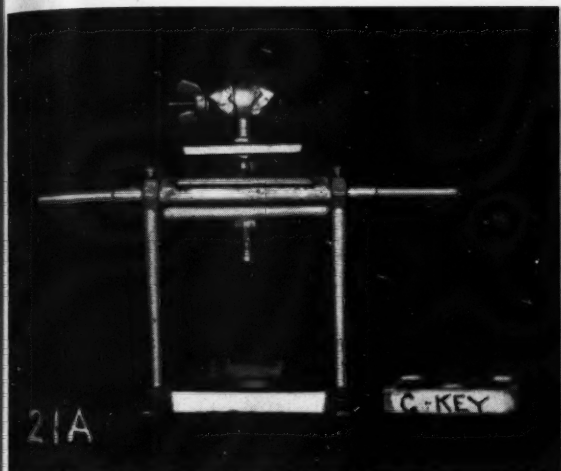
## 20C.

The adjustable articulator parts are now releasably secured and their original centric relationship is reestablished, as predetermined by the presence of the centric relation key on the articulator.

features the removable key also fulfills the valuable function of stabilizing the releasably secured relation-

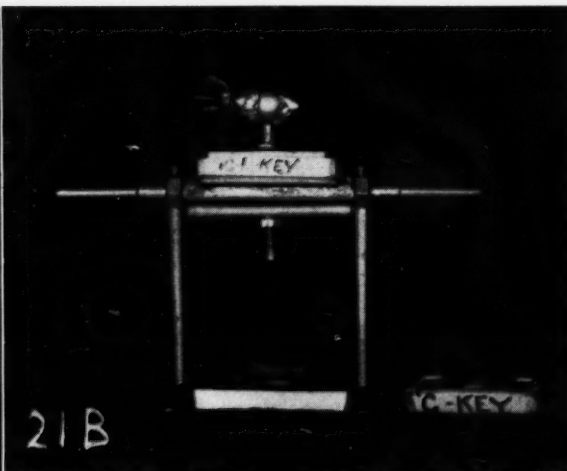
ship of the adjustable elements of the articulator. This is extremely important for preventing the possibility of

distorting the desired releasably secured relationship of the mounted casts or appliances.



**21A.**  
The adjustable articulator elements are releasably secured in a desired relationship. The centric relation key is shown removed from the articulator.

**21B.**  
The articulator is shown with a new key which was made to record the releasably secured relationship of the adjustable articulator elements shown in Figure 21A. The method for making this new key will be shown later. The original centric relation key is shown removed from the articulator.



Any number of different keys can be made to record any variety of different relationships of the adjustable articulator elements. Any key which is made can be used in the articulator as a mechanical means for recovering the relationship of the adjustable parts for which the key was made, using the same procedure previously described for recovering and reestablishing the centric relation of the adjustable articulator elements with the centric relation key.

It is evident that the relationships of the releasably secured cast holders can also represent the equivalent relationships of attached casts or appliances of a patient.

**Extendable Rods Provided** — The articulator also provides extendable rods in the hollow hinge pin of the articulator's pivotal joint. These rods are used to engage the recorded hinge-axis points of the mandibular hinge-axis relator. This feature was necessary because of the design of the mandibular hinge-axis relator, which will be described later.

### **General Mechanical Features of Articulator**

In practice, the releasably secured occluded maxillomandibular relationships of the casts or appliances mounted on the articulator are determined with interocclusal wax bite records of maxillomandibular relations taken from the patient. The removable keys are merely valuable articulator records of these relationships and a mechanical substitute for

the bite records themselves. The keys give the articulator the necessary memory for recovering any relationship on the articulator for which a key was made, if for some reason the relationship of the articulator elements was altered.

**Key Clinically Important**—In practice, the original centric relation key is considered essential. If for some reason a new centric relation of the mounted casts or appliances must be releasably secured in the articulator, a new centric relation key must be made. The original centric relation key is then dispensed with for that case.

**Key Used When Needed**—For any of the releasably secured eccentric relations of the mounted casts or appliances, a key is made only if it is considered desirable.

The method for making and clinic-

ally using the keys will be shown when the step-by-step procedures concerned with the use of the articulator are described.

### **Summary**

An articulator with a novel arrangement of its mechanical parts has been described. It can releasably secure mounted casts or appliances in any of a universal variety of occluded maxillomandibular relations, as determined with interocclusal wax bite records obtained from the patient, to duplicate any of a variety of essential maxillomandibular relations.

Articulator records, keys, which can serve as a mechanical substitute for the interocclusal wax bite records used for relating the mounted casts or appliances have been shown.

(End of Part Two)

246 Woodmere Boulevard



# IMPROVED PHONETICS

## *in Artificial Denture Construction*

LESLIE R. ALLEN, Lieutenant Colonel, USAF (DC)\*, San Francisco

### DIGEST

*In an article on the importance of phonetics in full denture prosthesis published in the May 1935 issue of DENTAL DIGEST, J. F. Landa stated that the three major factors in complete denture construction are (1) mechanics, (2) esthetics, and (3) phonetics. Considerable progress has been made in improving mechanics and esthetics but little has been done to improve phonetics. In the Air Force faulty speech is not to be tolerated when it concerns the flyer or control tower operator, because failure to speak distinctly over the communication system could result in danger to both aircraft and crew. These operators are not immune to dental disease and some of them lose a sufficient number of teeth to warrant replacement. In the prosthetic treatment for this group, therefore, phonetics is an acute problem. The objective of the present investigation was to develop a procedure in denture construction which would enable the patient to speak clearly at the time of insertion of the denture.*

\*From Research Dentistry Division, U.S. Air Force School of Aviation Medicine, Randolph Air Force Base, Texas, Report 59-10. Colonel Allen is now assigned to 3rd Area Dental Laboratory, U.S. Air Force Hospital, Tachikawa, APO 323, San Francisco.

†Snow, G. B., Dental Advertiser, 1899.

‡Landa, J. F.: Importance of Phonetics in Full Denture Prosthesis, DENTAL DIGEST 41:154-160 (May) 1935.

§Sears, W. H.: Principles and Technics for Complete Denture Construction, St. Louis, The C. V. Mosby Company, 1949.

¶Pound, E.: Esthetics and Phonetics in Full Denture Construction, D. J. Australia 23:126-134 (March) 1951.

### Previous Methods Evaluated

The literature in dental prosthetics was reviewed and previous methods for improving phonetics were evaluated:

1. Snow<sup>†</sup> pointed out that a tracing which started at the vault and passed over the lingual alveolar area to the incisal edge of the maxillary incisor always formed a reverse curve. He recommended thickening and contouring the area lingual to the collars of the maxillary incisors of the artificial denture in order to reproduce this reverse curve, and maintained that this reproduction facilitated the pronunciation of the *s* and *sh*.

2. Landa<sup>‡</sup> used the labiodentals (*f* and *v*) as an adjunct to the arrangement of the maxillary anteriors. He believed the teeth should be arranged so that these fricatives can be pronounced easily and naturally. Landa also maintained that proper vertical dimension is the key to proper pronunciation of the *s* and *sh*.

3. Sears<sup>§</sup> reported that clearer *s* pronunciation will result from fashioning the area of the anterior median ridge according to the type of tongue. He recommended making a groove in this area for the broad tongue with a slight median sulcus, and the building of a ridge in this area for the tongue with a deep median sulcus. Sears also advocated taking a palatogram in cases in which the median sulcus of the tongue does not coincide with the midline.

4. Pound<sup>¶</sup> believed that the entire lingual aspect of the maxillary den-

ture should be contoured to simulate the normal, if proper phonetics is to be attained.

5. Many authors recommend the reproduction of the rugae as an adjunct to proper phonetics. Probably the oldest and most widely used procedure for improving speech is the thinning of the entire lingual surface of the maxillary denture in order to create more room for the tongue.

*Tongue Position in Phonetics*—Elementary physics reminds us that all that is required to produce sound is a source of energy and a vibration:

(1) The source of energy for the voice is expired air from the lungs, and the vibrator is the margins of the vocal folds in the larynx.

(2) As air passes the highly sensitive vocal folds, appropriate portions of the margins vibrate to produce the desired sound.

(3) This sound is modulated by the larynx, the laryngeal pharynx, and the nasopharynx, the nose, and the oral cavity, all of which act as cavity resonators to give resonance to the voice.

(4) Further modulation is brought about by the articulation which takes place between the vocal folds, the velum and the pharynx, the tongue and the velum, the tongue and the hard palate, the tongue and the teeth, the lips and teeth, and finally the lips themselves.

*Role of Tongue in Speech*—The tongue changes position and shape for the pronunciation of each of the vowels and is the principal articulator for the consonants. In pronouncing the consonants, the tongue contacts various portions of the teeth, the alveolar ridge, and the hard palate.



**Normal Contact of Tongue:** As these structures are either replaced or covered by the artificial denture, it is basic to know exactly which portions of the structure are normally contacted by the tongue in pronouncing a given consonant.

**Palatograms on Dentulous Persons with Normal Speech:** To demonstrate normal contacts of the tongue palatograms were made on a group of dentulous persons with normal speech who were chosen to incorporate a maximum variety of tooth arrangement, tooth occlusion, arch form, arch size, vault form, and vault depth.

### Procedure Adopted

**Palatograms for the Dentulous Group**—The following steps were taken:

1. A uniformly thin artificial palate was constructed of methyl methacrylate for each subject. The palate was inserted and tested for retention and adaptation. The subject practiced speaking with the palate in place until speech became clear.

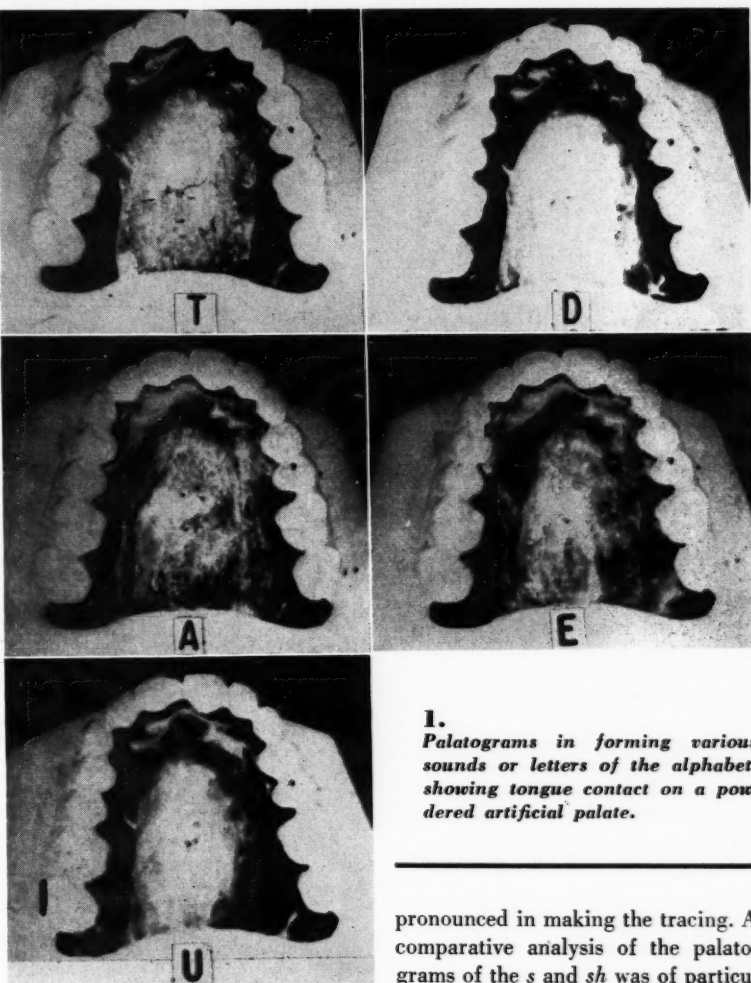
2. Trial tests for the palatograms were made by having the subject pronounce a given sound and open his mouth without again contacting the palate with his tongue.

3. The palate was removed, thoroughly dried, dusted with nonscented talcum powder, and carefully inserted in the mouth. The subject was asked to pronounce the previously practiced sound, and the palate was carefully removed and examined.

4. The moist tongue removed the powder from the area of contact, leaving a clear tracing (palatogram) on the artificial palate (Fig. 1).

5. After a short period, however, this area dried and the tracing became obscure. In order to preserve the palatogram for future study, the contact area was outlined with a glass-marking pencil immediately after the palate was removed from the mouth.

**Problems Encountered**—In studying and comparing the palatograms which were made for all the vowels it was found that the tongue contacts portions of the palate in pronouncing all the vowels except *o*. Consonants alone could not be used because the pronunciation of any of the consonants involves two or more sounds, and therefore, two or more tongue positions; for example, to pronounce *s*, the *e* sound is made, followed by the characteristic "s-s-s" of the *s*. The same *e* sound precedes the *f*, *l*, *m*, and *n*. In pronouncing *t*, the "tuh" is made first, followed by the *e*. The same *e* follows *b*, *c*, *d*, *g*, *p*, *v*, and *z*. In order to avoid primary or secondary contact, the *o* was used in combination with whatever consonant was studied.



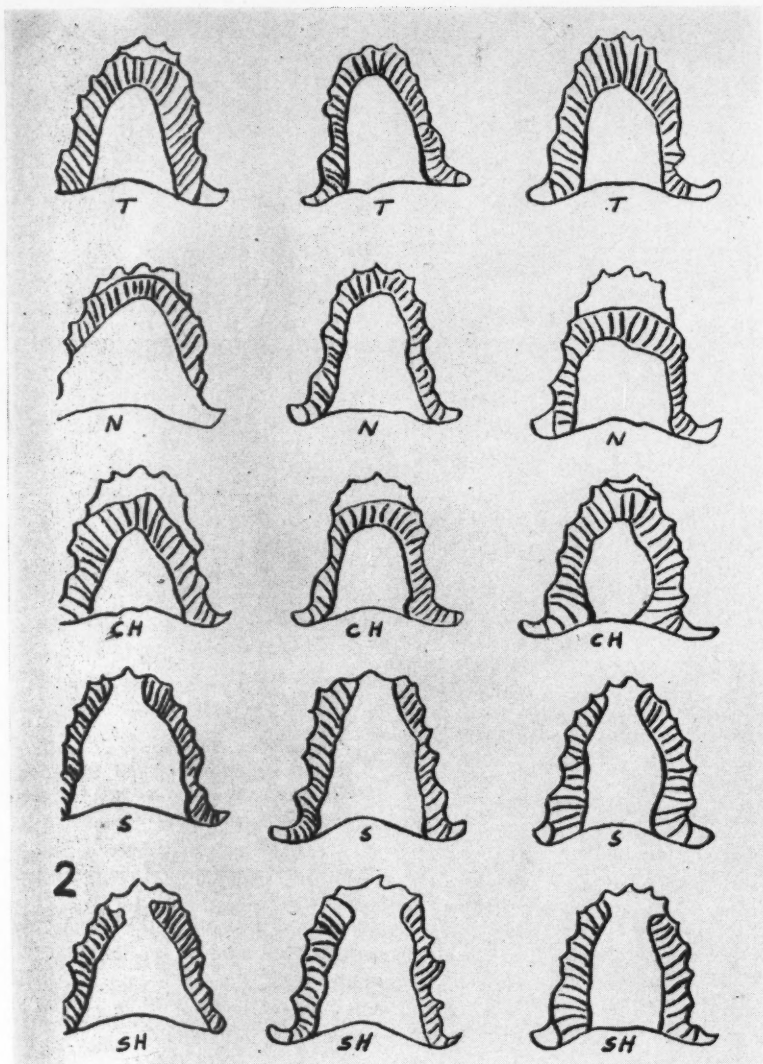
**1.**  
**Palatograms in forming various sounds or letters of the alphabet, showing tongue contact on a powdered artificial palate.**

pronounced in making the tracing. A comparative analysis of the palatograms of the *s* and *sh* was of particular interest, because each of these presented an individual similarity and constituted a distinct pattern (Figs. 3 and 4).

**Addition of Thickness in Anterior Region**—Over 500 palatograms were made from which it was possible to obtain a definite picture of tongue palatal contact for the pronunciation of the vowel or consonant. In order to test the areas most sensitive to thickness, various portions of the artificial palate were thickened in increments of 1 millimeter of wax. The addition of 1 millimeter in the anterior region from cuspid to cuspid made speech awkward, difficult, and indistinct.

**Thickness Added**—The addition of 1 millimeter thickness in the posterior alveolar area made speech awkward but not indistinct. The entire vault area could be filled with wax up to the outline of tongue contact without interfering with speech (Fig. 5).

**Palatograms of Consonants Studied**—In studying and comparing the palatograms of the same consonant pronounced by different members of the group, it was found that no two persons contacted exactly the same area in pronouncing the consonant, but that a sufficient similarity existed to constitute a pattern (Fig. 2). The patterns for the *t*, *d*, *n*, and *l* had been



**2.**  
*Palatograms of various people, sufficiently similar to constitute a pattern.*

### **Palatograms for the Edentulous Group**

In the first part of this phase of the investigation the criterion was that the subject be edentulous and physiologically ready for prosthetic treatment.

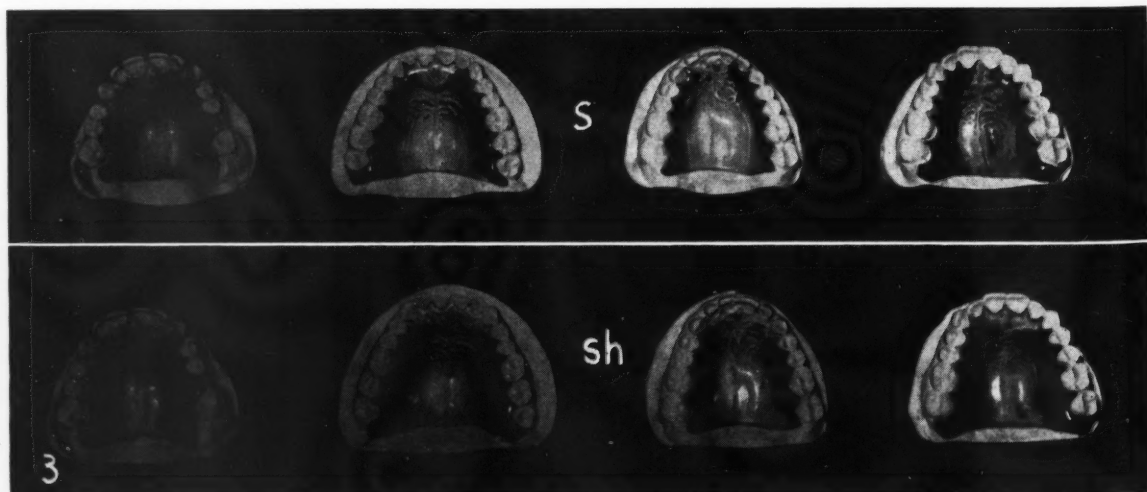
**Steps Taken**—1. The application of the palatographic study was started while the dentures were in the waxed, "try-in" stage, and after satisfactory esthetics, correct centric, proper vertical dimension, and balanced occlusion had been attained.

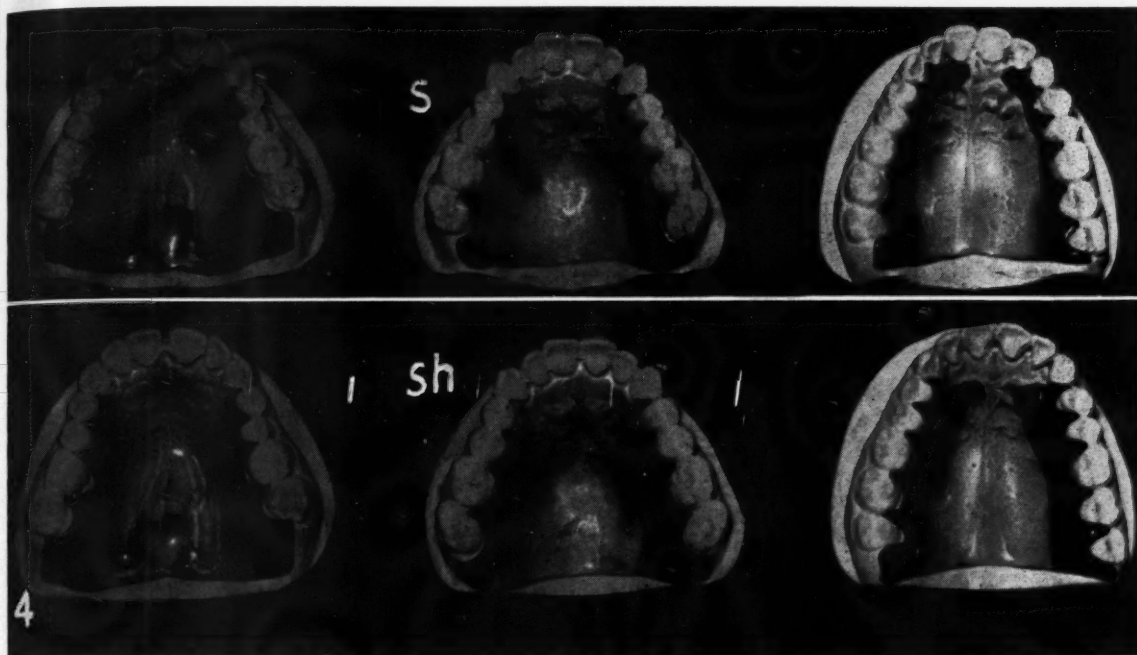
2. The mandibular trial base was waxed to completion in the usual manner, and the final waxing was done on the labial and buccal aspects of the maxillary trial base.

3. The waxing on the lingual surface of the maxillary trial base was confined to the area immediately adjacent to the teeth, with a minimum of wax added to assure a smooth surface between baseplate and collars of the teeth (Fig. 6A). The mandibular trial base was placed in the subject's mouth, after adhesive powder had been sprinkled on the tissue surface to ensure maximum retention and stability.

4. Nonscented talcum powder was dusted on the lingual surface of the maxillary trial base, and the base was carefully seated in the subject's mouth. The subject was then instruc-

**3.**  
*Patterns in palatograms in pronouncing s and sh.*





4. Patterns in palatograms in pronouncing *s* and *sh*.

ted to pronounce the consonant to be studied.

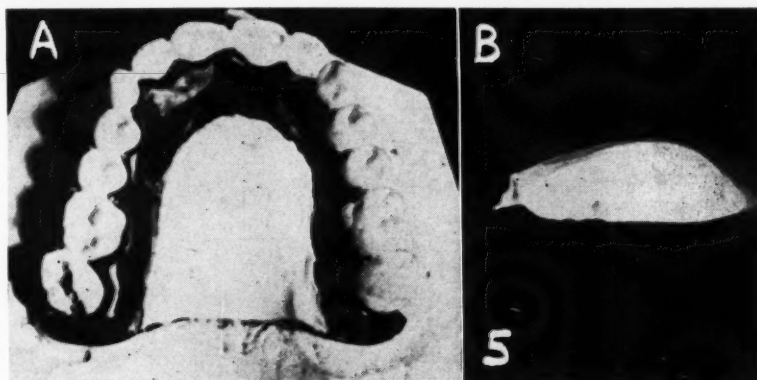
5. The trial base was carefully removed from the patient's mouth, and the area of tongue contact was outlined with a glass-marking pencil (Fig. 6B).

6. The outlined area was waxed, contoured, redusted, and another palatogram made. This procedure was repeated until a normal tongue-palatal contact was established.

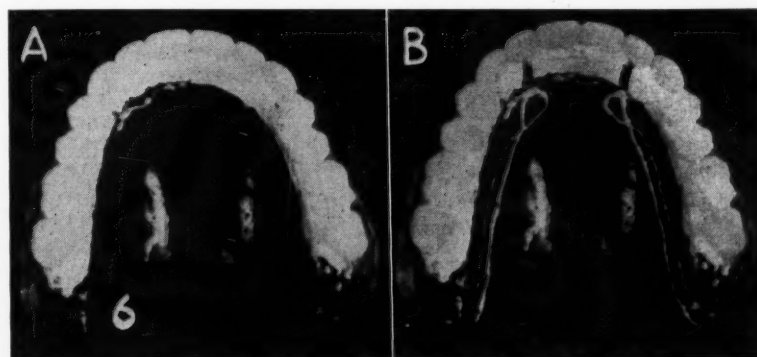
**Outlined Area Thickened**—To develop a normal pattern, it was always necessary to thicken the outlined area. Sufficient thickness was usually obtained by the following procedures:

1. Waxing was started around the first molar, enough wax was added to create a 1-millimeter margin around the collar of this tooth. The area between this margin and the pencil line on the palate was then filled with wax and smoothed (Fig. 7A).

2. Enough was added around the delineated anterior teeth (those included in the tracing) to allow a 1/2-millimeter margin at the collars. The area between this margin and the



5. (A) Vault area waxed. (B) Cross section of wax.



6. (A) Waxed surface between baseplate and collars of teeth. (B) Area of tongue contact outlined with glass-marking pencil.



anterior palatal line was waxed and smoothed (Fig. 7B).

3. Waxing of the bicuspid area was accomplished by adding wax between the palate line and the collars of the bicuspid teeth in sufficient quantity to present an even contour between the anterior and molar waxed areas.

4. Waxing was completed by adding sufficient wax between the palatal line and the second molar to present an even contour between the waxed first molar and posterior border of the baseplate.

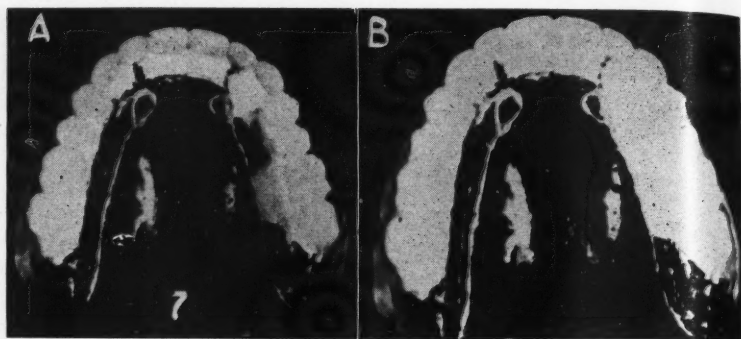
**Contouring Sufficient in Some Cases**—Contouring the tongue palatal contact area to simulate the normal was all that was required for the proper pronunciation of the *s* and *sh*; most cases required the addition of a small amount of wax, however, in the area of the incisive papilla to prevent the jet of air emitted through the median sulcus of the tongue from escaping toward the vault (Fig. 8A). The completed lingual wax-up is shown in Figure 8B.

**Final Phase of Investigation**—This consisted of studying tongue palatal contact of denture wearers who had faulty speech. The speech inaccuracy in all these cases was mispronunciation of the *s* and *sh*. The mispronunciations fell into two categories: (A) there was a continuous *s*, so that the speech resulted in a whistling when the *s* was pronounced; (B) there was an indistinct *s*, which resulted in the *sh* sound when the *s* was pronounced. Palatograms were made on this group in the usual fashion. It was found that in all cases there was an abnormal tongue palatal contact.

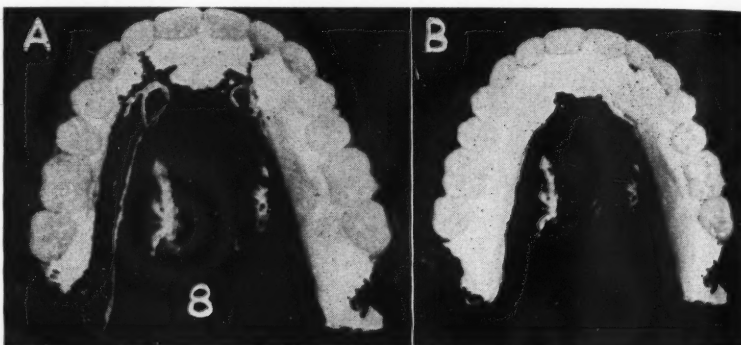
### Findings

A thin, well-adapted artificial palate (about 1 millimeter thick) does not greatly impair normal speech. In making the speech test prior to making the palatograms for the dentulous group, it was found that only a few minutes of practice were required by most of the subjects to enunciate properly. It was also noted that during this short practice period, the *t*, *d*, *n*, and *l* were more awkward to pronounce than the *s* and *sh*.

**Area Involved in Pronouncing Consonants**—A study of the palatograms



7. (A) Waxed area between collar of tooth and pencil line. (B) Waxed area between collar of tooth and anterior palatal line.



8. (A) Waxed area of the incisive papilla. (B) Complete lingual waxed area.

showed that in pronouncing the consonants, the primary area of tongue contact is the alveolar area, and that only a small portion of the hard palate is involved.

**Analysis of *s* and *sh* Palatography**—It was noted that the rugae area was contacted slightly in some cases and not at all in others, but that in all cases the entire posterior alveolar area was always contacted. It was further noted that the rugae area was only slightly involved in the pronunciation of the *t*, *d*, *n*, and *l*.

**Requirement for Normal Tongue Pattern**—It was found that in order to develop a normal tongue pattern for the *s* and *sh* in the maxillary denture, it was always necessary to thicken the posterior alveolar area.

### Discussion

Many clinicians have successfully used the reproduction of the reverse curve, as recommended by Snow, to

improve the pronunciation of the *s* and *sh*. Experiments showed that this procedure has merit in that it prevents the jet of air emitted by the median sulcus of the tongue from escaping toward the vault. It was found, however, that in some instances, the reproduction interfered with the pronunciation of the *t*, *d*, *n*, and *l*, and occasionally interfered with anterior lateral tongue contact in pronouncing the *s*. To avoid these possible interferences, thickening was confined to the area of the incisive papilla.

**Use of Labiodentals**—As recommended by Landa, this is a prudent procedure for arriving at proper arrangement of the anterior teeth, and the proper vertical dimension which he recommends for *s* pronunciation certainly is important; however, all too often, after arriving at proper vertical dimension, faulty pronunciation of this consonant is still evident.



**Grooving the Area**—Sear's method of grooving the area of the anterior median raphe for the tongue with a slight median sulcus was found to be helpful in some cases; however, thickening the lateral alveolar area to produce normal tongue contacts tends to increase the median sulcus of the tongue and allows a jet of air to be emitted normally. Sear's suggestion of taking a palatogram on cases in which the median sulcus does not coincide with the midline is excellent and is an added reason for the use of the palatography to improve phonetics in complete denture construction.

**Lack of Coincidence**—In the palatographic study of the dentulous group, it was found that the median sulcus and the midline did not coincide in 20 per cent of the cases studied. The lack of coincidence is greater in the edentulous cases, because for esthetic reasons, the maxillary centrals are set according to the facial midline rather than to the palatal midline.

**Normal Simulated by Contouring**—Pound was successful in improving phonetics by contouring the entire lingual aspect of the maxillary denture to simulate the normal; however, most of us do not possess the dexterity to approximate Pound's craftsmanship. In this investigation, it was found that good results could be attained by thickening the necessary areas to produce normal tongue con-

tact without meticulous carving and contouring.

### Summary and Conclusions

Palatograms were made on a group of dentulous persons who had normal speech and presented a variety of problems as to tooth arrangement, tooth occlusion, arch form, arch size, vault form, and vault height. A comparative analysis of the palatograms indicated that no two persons contacted exactly the same area in pronouncing a given consonant, but that sufficient similarity existed to constitute a pattern. The patterns for the *t*, *d*, *n*, and *l* were not distinct; that is, it was not possible to look at a palatogram and determine which of these consonants had been pronounced in making the tracing; the pattern for these consonants as a group was distinct, however, so that it was possible to look at a palatogram and be certain that either *t*, *d*, *n*, or *l* had been pronounced.

**Similarities Noted**—The patterns for the *s* and *sh* presented an individual similarity and constituted a distinct pattern. The pattern for the *s* begins approximately in the region of the lateral incisors, and bilaterally includes most of the posterior alveolar region. The pattern for the *sh* begins approximately in the cuspid region, and bilaterally includes all of the posterior alveolar area and some of the vault. In a comparative analysis of the *s* and *sh* palatography, it was

found that the rugae area was contacted in some cases and not at all in others, but that in all cases, the entire posterior alveolar area was always contacted. It was also found that the rugae area was only slightly involved in the pronunciation of the *t*, *d*, *n*, and *l*.

**Effects of Thickening**—The area most sensitive to thickness is the anterior alveolar area from cuspid to cuspid. An addition of 1-millimeter thickness in this area made speech awkward and indistinct, and an additional 1-millimeter thickness in the posterior alveolar area made speech awkward but not indistinct. The entire vault area could be thickened up to the tongue palatal tracing line without interfering with speech.

**Necessary Measures**—To develop a normal *s* and *sh* tongue palatal pattern in the waxed maxillary trial base, it is usually necessary to thicken the area outlined by the palatogram. In most cases, it is also necessary to thicken the area of the incisive papilla to prevent the jet of air emitted by the median sulcus of the tongue from escaping toward the vault. It was found that building the tongue palatal contact area to normal and thickening the area of the incisive papilla facilitates proper enunciation and eliminates much of the postinsertion practice period.

Adapted from the *United States Armed Forces Medical Journal* 10:1022 (Sept.) 1959.

## Surgical Collapse During and After Corticosteroid Therapy

R. L. S. BAYLISS, M.D., F.R.C.P., London

### Summary

Corticosteroid therapy, especially if prolonged, causes adrenal suppression. Surgical procedures increase the need for adrenocortical secretions, and may lead to fatal collapse in patients who are currently receiving steroid therapy or who have had such treatment within the previous two years.

### Preliminary Information Essential

—To prevent disasters it is essential to know before operation whether the

patient is having or has had steroid therapy. Patients currently having steroid treatment need more, not less, corticosteroid during the operative period. They and those who have had steroid treatment during the previous 18 months should be given 100 to 200 milligrams of cortisone acetate intramuscularly 24 hours and again 4 hours preoperatively. Postoperatively 100 to 200 milligrams of cortisone is given daily and gradually reduced over a period of a week—by mouth

if the patient is not vomiting, by intramuscular injection if he is.

**When to Omit Special Preoperative Measures**—It is usually safe to omit special preoperative measures in patients who have stopped steroid therapy more than 18 months previously, provided a careful watch is kept on the pulse and blood pressure and, if collapse occurs, immediate treatment is available with intravenous hydrocortisone hemisuccinate in a dose of 100 to 400 milligrams per 24 hours.

Adapted from *British Medical Journal* No. 5102:936 (Oct. 18) 1958.

# An Aid in Securing The Vertical Height of BITE-BLOCKS for FULL DENTURES

HAROLD S. JONES, D.D.S., Allentown, Pennsylvania

## DIGEST

*The procedure described in this article is a refinement of the method commonly used to secure vertical height. The procedure is based on an individual measurement that is carefully taken in each patient during the maneuver of swallowing.*

## Basic Theory

The procedure to be described is based on a measurement known as the swallowing distance of the man-

dible. In edentulous patients this measurement is used to determine the vertical height of bite-blocks. When carefully taken and properly interpreted, this measurement is accurate and the procedure in which it is used has been consistently successful.

## Definitions

1. Swallowing distance is the amount of upward movement of the mandible from a rest position to the highest position attained when executing the action of swallowing, and is of momentary duration.

2. Swallowing position is the oc-

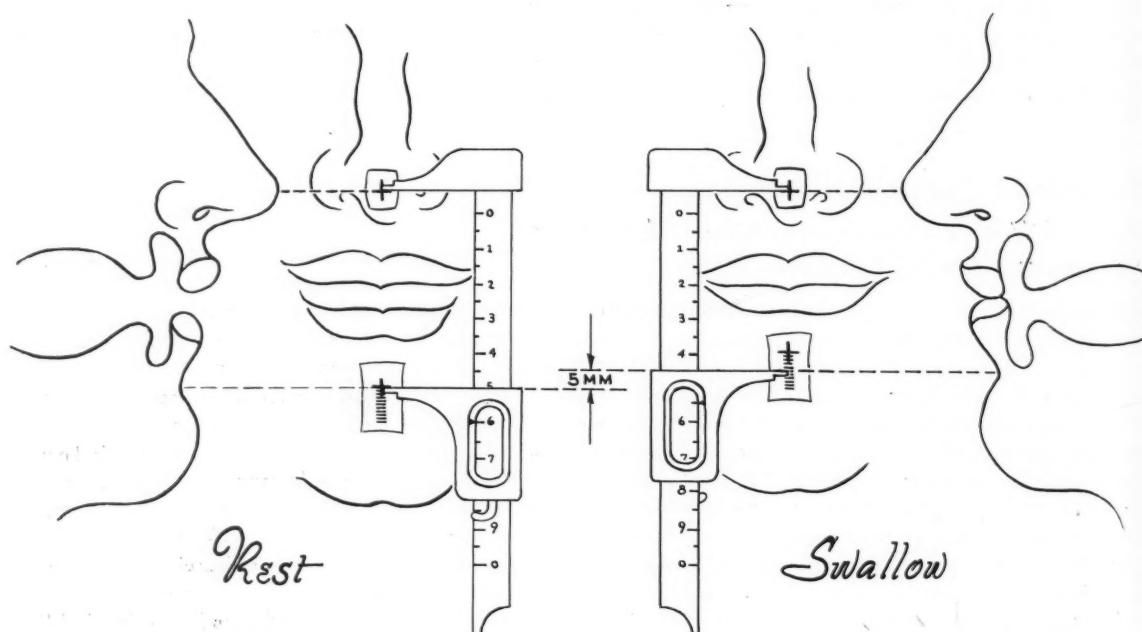
cluding position of natural teeth and is also the occluding position or height of the bite-blocks, known as vertical height.

3. Rest distance is the measurement taken when the mandible is in a relaxed position. The teeth or bite-blocks are open to a degree known as the free-way space.

## Method to Determine Measurements

1. An adhesive tab is placed on the nose and chin, cross marks are inscribed on the tabs with ink. The marks are placed in a straight line to facilitate a gauge contacting both marks when the gauge is applied.

2. While the patient is relaxed,



without bite-blocks or other obstruction in the mouth the gauge is applied and the distance from the cross marks is measured.

3. The gauge is locked. This is known as rest position.

**Distance Marked**—Maintaining the position of the gauge on the face the patient is requested to swallow. During the maneuver note the amount of distance the mandible has moved upward. The additional lines drawn under the cross mark on the chin tab will aid in observing this distance. Mark with a pencil or note the exact distance the arm of the gauge has shown.

**Vertical Height**—The measurement shown on the locked gauge is recorded as the rest position. Measure the distance on the chin tab from the cross mark to the line indicated dur-

ing the swallowing action. As shown in the drawing at rest the distance is 60 millimeters and the patient's swallowing distance is 5 millimeters. The vertical height is the rest distance (60 millimeters) less the swallowing distance (5 millimeters): 55 millimeters.

**Accuracy Ensured**—All measurements of vertical height have value because they assure the accuracy of the method and also indicate that the patient is conducting his part of the procedure consistently.

**Former Vertical Height Compared**—When a patient is having dentures made other than first ones, the vertical height of old dentures can be determined for comparison. If the vertical height in an old denture is too short or too long, measurements of the denture may be verified in

comparison to the new measurement and a possible variance noted.

### **Additional Measures**

The patient is asked to open his jaw as widely as possible; meanwhile pressure is applied on the jaw until discomfort occurs. The pressure is released at once and the mandible is returned to the most comfortable position. The gauge is promptly applied and the two measurements are taken. This result is classified as exercise.

All measurements are retaken when inconsistency occurs. Constant measurements are usually obtained but when variations are present some error on the part of the patient must be eliminated.

1121 Walnut Street

## **Cancer of Tongue: 100 Cases**

One hundred patients with cancer of the tongue were observed at the Tumor Institute of Rosario, Argentina, between the ages of 50 and 70 years. Eighty-three were men and 17 were women. The tests for syphilis gave positive results in 16 patients.

**Location of Lesion**—The cancer was located at the base (root) of the tongue in 42 cases; it involved the three thirds of the movable part of the tongue in 5 cases and 1 or 2 thirds of the movable part of the tongue in 43 cases. In the remaining 10 cases the cancer was located either at the lateral edges or at the ventral surface of the tongue.

**Type of Tumor**—The tumor was basal cell epithelioma in 93 cases, carcinoma in situ 1, hemangioendothelioma in 1, tumor of the mixed glandular and mucous type in 1, carcinoma with reticular cells in 3, and fibrosarcoma in 1. The basal cell epithelioma was of the second or third degree of cellular differentiation in almost all cases.

**Types of Treatment Applied**—Cervical metastases showed on hospital-

ization in 65 patients; they developed in the course of the treatment in 6 patients, and did not appear at all in 29 patients. Fourteen patients were already at the inoperable stage of the disease. They were not given any treatment, not even palliative. In the remaining 86 patients, the treatment consisted of roentgenotherapy to 30 patients, radium to 15, surgical removal of the cancer lesion from the tongue in 3, combined roentgen and surgical treatment in 9, and radium combined with surgery in 29 patients.

**Appearance of Metastases**—Metastases at a distance appeared in 9 patients in the course of the treatment. They were generally located in the liver, lung, or cervical vertebrae, but in some cases the metastases appeared in the form of diffuse carcinoma. They were the immediate cause of death in all patients.

**Duration and Prognosis**—Forty-nine patients (including the 14 patients who were in the inoperable stage of the disease) died within 1 year after hospitalization; 30 patients are living without any recurrence or

residual lesion. Fifteen of these patients had lived between 1 and less than 5 years, and the other 15 patients, had lived for more than 5 years. One patient is living with local metastases 15 months after surgical removal of half of the tongue. The author concludes that cancer of the tongue is almost as frequent as cancer of the lips or of the larynx, and that the prognosis is very poor.

### **Conclusion**

The treatment should be conducted as follows: Interstitial radium when the lesions are located at the movable part of the tongue, teletherapy when the lesion is at the root of cervical adenopathy. Cervical adenopathies should not be dissected early but only when they are clinically demonstrable. Dissection in block is indicated when the primary tumor cannot be controlled, as shown by results of histological examination.

Adapted from Medical Literature Abstracts, *Journal of the American Medical Association* 168:947 (Oct. 18) 1958.

# The Use of WOODEN WEDGES in Operative Dentistry

H. M. HOLMES, D.D.S., Lake Tahoe, California

## DIGEST

*Various types of wedges employed to improve matrix band adaptation and increase tissue retraction in restorative dentistry are discussed in this article and the specific method of their use in each individual case is outlined.*

### Simplified Wedging Techniques

The use of wedges for improvement of matrix band adaptation and tissue retraction has the following advantages:

1. Soft wooden wedges about  $\frac{1}{2}$  inch long with a fast taper, placed from the buccal and from the lingual so that the ends overlap (Figs. 1 and 2) will eliminate seepage of blood or moisture from the gingival tissues into the cavity before or during restorative techniques.

The wedge is available from deal-

ers under the name No-Hem No. 11 Matrix Wedge. It is treated with a mild hemostatic and topical anesthetic.

2. Soft wedges adapt themselves readily to irregularities along gingival margins and expand when they absorb moisture to give greater adaptation and tooth separation.

3. After being placed relatively loosely, within a few seconds the wedges produce a numbing effect and may be forced in tightly from both sides at once with little discomfort to the patient.

### Additional Advantages

1. The matrix may be small and simple in design, often not requiring the use of matrix retainers which may pull and flatten the contact points, resulting in a "food trap" (Figs. 2 and 3).

2. Without the use of large matrix

clamps or retainers a complete quadrant of teeth may be restored at one time (Fig. 4). Small clamps are available or may be made of spring steel, which can be snapped between the teeth to hold the occlusal portion of the matrix bands against the teeth and still permit a rounded contact point (Fig. 4).

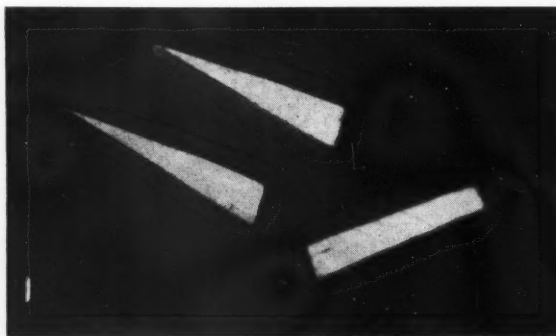
3. The restoration may be covered with dry foil, thus permitting the patient to remain with mouth closed during the initial setting of the alloy. This is not possible with most larger types of matrix retainers.

4. By overlapping the two wedges it is possible to secure pressure even between widely separated teeth.

5. On occasion, only one wedge is required for an adequate tightening function with no other retainer needed.

### Technical Considerations

1. When placing a wedge do not permit the sharp end to catch and pierce the septal tissue on the oppo-



**1.** Enlarged view of wedges which the author has found to be ideal for amalgam matrix adaptation. Made of soft wood, they adapt to all irregularities and become tighter as they absorb moisture. The rectangular end is easy to grasp.



**2.** Two soft wood wedges overlapping between teeth to give maximum adaptation as well as separation of teeth for tight contact point.



site side as the wedge is inserted. If this should be the case, depress the septal tissue on the opposite side with the flat side of a Hollenbeck carver and then force the wedge into place.

2. Another useful wedge is a long thin hardwood one. This type of wedge will be of aid in retracting interproximal tissues for impressions, particularly with the hydrocolloids and alginates.

3. If the correct portion of a long tapered wedge is cut to fit the space to be retracted (Fig. 5) and forced firmly between the teeth *before* cavity preparation is made the following advantages will result:

(1) Danger of touching the soft tissue with the bur will be avoided.

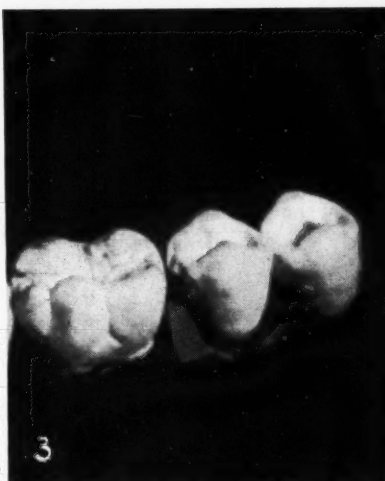
(2) No bleeding will occur to obstruct the field of operation.

(3) The impression may be taken immediately after preparation of the cavity.

(4) The field remains free of bleeding until the final temporary restoration is placed and the patient is ready for dismissal. At this time the wedge must be removed to allow circulation to return to normal.

### Additional Considerations

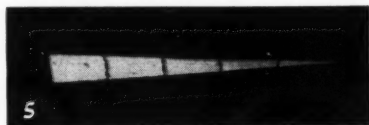
1. After completion of cavity preparation, if the margins are not entirely exposed above the soft tissues, select a slightly larger section of a similar wedge and force the narrow end of this wedge beneath the one already in place.



**3.** A small Class II cavity in a bicuspid with a simple steel matrix band adapted securely with only one soft wood wedge.



**4.** Three teeth in a lower quadrant ready to receive alloy. Double wedges and simple retainers in place. Tight contacts, rounded contours, gingival adaptation are attained quickly and with patient comfort.



**5.** Dotted lines across wedge illustrate how wedge may be cut or broken to secure the desired width for adequate pressure on gingival tissue to expose the margin for a hydrocolloid impression.

2. After partly inserting this section with serrated cotton pliers, remove the first section and immediately complete the insertion of the second wedge, gripping it firmly so that it can not twist as it is forced into place. If necessary, tuck the edges down with a suitable instrument to expose the entire gingival margin.

3. These wedges may also be obtained from dealers under the name No-Hem No. 7 Tissue Wedge.

### Specific Use

This type of wedge is extremely valuable for anterior silicate or plastic restorations and may be applied in the following manner:

1. Place a full length wedge *before* starting cavity preparation (Fig. 6).



**6.** A thin wedge is inserted before cavity preparation is started. This prevents seepage and bleeding.



**7.** A transparent strip is adapted securely to the gingival margin; using a wedge thin enough to avoid indenting strip into cavity.

This will protect the interseptal tissues or the rubber dam when it is used.

2. After the cavity is completed and ready for restoring, place a strip or band between the teeth and against the wedge. Withdraw the wedge slightly and quickly place the matrix strip in position. Reinsert the wedge at once to hold the band against the margin and prevent seepage of fluid or blood (Fig. 7).

3. Leave the wedge in place until the restoration is completed to prevent injury to tissues and possible

bleeding.

4. Many silicate failures are due to moisture contamination at the time of insertion.

### **Summary of Advantages**

1. Soft wedges properly used are quick, positive, and more comfortable to use for amalgam matrix adaptation, and make it possible to place multiple alloys in the same quadrant at one sitting.

2. Long, tapered, thin, hardwood wedges produce quicker, safer, easier septal tissue retraction in 90 per cent

of indirect inlay procedures. These wedges also prevent bleeding.

3. The hardwood wedges are time-savers and produce excellent results in silicate and acrylic resin anterior restorations.

### **Conclusion**

Use of the proper wedge for the particular operative procedure will result in the simplification of many complicated and difficult operative problems.

*Box 26, King's Beach*

## **Science and Human Values**

If American science is to continue to prosper, if it is to attract to it its proper complement of creative and gifted minds, we must combat the notions that science and engineering are incompatible with the great humanities, and that they are narrowly materialistic and destructive of human values.<sup>2</sup> In the face of the practical responsibilities which rest in science and engineering for our security and our material welfare, it is all too easy for people to conclude that science is inimical to the spiritual ends of life and for them

to fail to understand that in reality it is one of man's most powerful and noble means for searching out truth and for augmenting man's dignity by augmenting his understanding.

*Obligation of the Scientist*—Scientists have an obligation to make this true character of science better understood, not by arrogant advocacy of science and technology as the only objective means to increase our understanding and well-being, but by the balanced and tolerant practice and presentation of

science as one of the powerful means by which man can increase his knowledge and understanding and still remain humble and ennobled before the wonder and the majesty of what he does not understand.

*Humanistic Force*—When thus perceived and practiced, and when not misused for ignoble ends, science and engineering are major means for "making gentle the life of mankind." When so practiced and used, they become one of the great humanistic forces of our time.

Adapted from *Science* 129:136 (Jan. 16) 1959.

## **An Invitation to Contributors:**

Since 1894 when DENTAL DIGEST was founded the pages of this journal have been open to articles contributed by dentists throughout the world. The emphasis has been, and will continue to be, on the publication of articles on all phases of clinical practice.

DENTAL DIGEST encourages the use of many illustrations to show techniques. We prefer that the text be short and that step-by-step tech-

nical procedures be presented as an illustrated "clinic on paper."

A booklet, *Suggestions to Authors*, has been prepared by the editorial staff and will be sent free on request.

Why publish? Any dentist who has developed a technique, refined a procedure, or has made a significant clinical observation has the opportunity to record these advancements and elevate his profes-

sional standing by making a contribution to the literature.

\* \* \*

For all illustrated articles that appear in DENTAL DIGEST the author will receive an honorarium of \$50 to help defray his expense in preparing the photography or drawings.

Contributors are invited to send their articles to:

Edward J. Ryan, D.D.S.  
Editor, DENTAL DIGEST  
708 Church Street  
Evanston, Illinois

## The EDITOR'S Page

COMPLETE denture construction can be one of the most satisfying services that the dentist performs—or one of the most discouraging. When everything goes well the dentist and the patient are both elated and effusive in their mutual approval. When things go wrong there may be a strain in the interpersonal relations; recriminations are entertained even if they do not reach the level of outright speech.

Aside from deficiencies in technique, the next most common cause of failure in complete denture service is in the negligence on the part of the dentist to prepare the patient for the experience. What dentists may look upon as a mechanical procedure is viewed in a different way by the patient. It is he who is emotionally involved: he may fear that his appearance may be altered, that his speech may not be clear, that he will have difficulty in eating. These are all natural anxieties that should be considered and resolved *before* treatment is begun.

If the dentist takes the time to discuss and understand these emotion-charged aspects of complete denture service before he begins treatment he will have less explaining to do after treatment is completed. In the beginning, the wise clinician tries to uncover the expectations that the patient holds toward the experience. Some patients, because of their constitutional make-up, have extreme anxieties toward dentures. Others, because of a more stoic outlook, a lower threshold of anxiety, or less imagination, approach the complete denture experience as they would any other mechanical event. The irony in these extremes of reactivity is that the hyperreactive patient will often be the most appreciative in the end and the more stolid patient the least appreciative. It is probably some compensatory phenomenon at work.

Any dentist who practices complete denture prosthodontics will find wisdom in these words by Morris:<sup>1</sup>

"During denture construction, study the patient's reaction and coordination and before denture delivery restudy the patient planning and treatment chart, so that you will know what accomplishments to expect from the patient in the use of the dentures. Patients that coordinate well will usually learn to handle their dentures quickly. Others will take

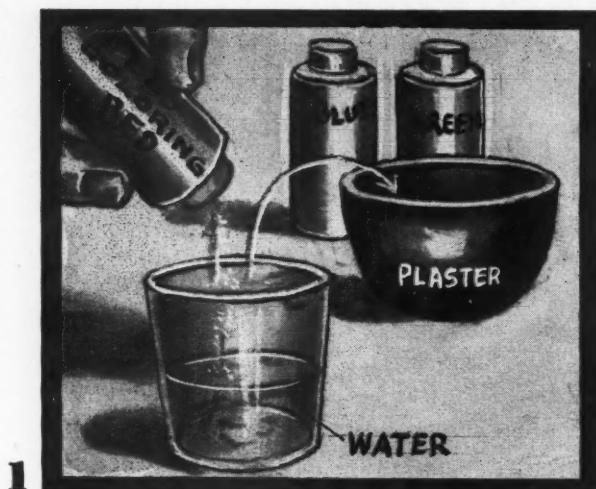
months to learn to handle them. This latter type of patient needs all the guidance and counsel you can give him through some of his discouragements while learning to use his new dentures.

"The dentist should be the one to give the instructions and guide the patient along, not take instructions from the patient. Have the patient lay the old dentures aside, or better yet, let the dentist keep the old ones. Have the patient wear them day and night. At first there will be excess salivation, fullness, thickness of speech and sometimes gagging. Constant swallowing will rid the mouth of saliva. Reading out loud or talking will soon overcome speech difficulties. Biting hard, swallowing and breathing deeply through the nose will overcome the gag reflex. At times the taste seems affected. This is due to the rugae being covered so that food cannot be properly hydrolized in order that the taste buds on the tongue can pick up this solution and translate it into taste. Oftimes the patient will look 'all teeth' or show a great deal of the labial surfaces of the teeth at first, especially when the vertical dimension has been increased. In these cases after three or four weeks the lip musculature will return to about the same state of normality the patient had with the natural teeth in proper vertical dimension.

"The Class II jaw relation or receding chin type patient usually has the poorest denture foundation, the greatest degree of lateral jaw movement, is nervous and expects the impossible from the dentures. The Class III or prognathus patient can usually do little more than chew straight up and down. These cases give very little trouble to the dentist. In the Class I or normal jaw relationship anything from very good to very poor coordinating results are obtained."

The denture experience must be considered to be a potentially traumatic one in the lives of some patients. Without probing into the depths of symbolism (such as the association of the edentulous state with avirilism and senescence) the dentist must be aware that the transition from the natural dentition to dentures, often during the stressful climacteric years in both sexes, may be a low point in the life of a human being. In addition to technical skills the dentist should be equipped to extend understanding and psychologic support.

<sup>1</sup>Morris, W. E.: Complete Denture Adjustments, J. Ontario D. Ass. 10:6 (October) 1959.



## Clinical and Laboratory Suggestions

### Coloring Plaster

Harry W. Tustison, D.D.S., Ft. Lauderdale, Florida

**1.** If a colored plaster is desired, add a drop of the appropriate food color to the water in the mixing bowl. A choice of colors may be had from a grocery store.



### Removal of Copper Band Impression

Adolf Guldener, D.D.S., Zurich, Switzerland

**2.** Make a hole in the labial and the lingual of a copper band. To remove the band without danger of distortion of the impression, insert the ends of an Ivory matrix retainer in the holes and withdraw the band by grasping the handle of the matrix retainer.



### Acrylic Trays

Lewis G. Coffey, D.D.S., Rockymount, Virginia

**3.** An even thickness of acrylic for an impression tray may be assured by placing the mass of quick-cure acrylic between two wet ceramic tile blocks and squeezing the mass until the proper thickness is obtained.

### READERS are Urged to Collect \$10.00

For every practical clinical or laboratory suggestion that is usable, DENTAL DIGEST will pay \$10 on publication.

You do not have to write an article. Furnish us with rough drawings or sketches, from which we will make suitable illustrations; write a brief description of the

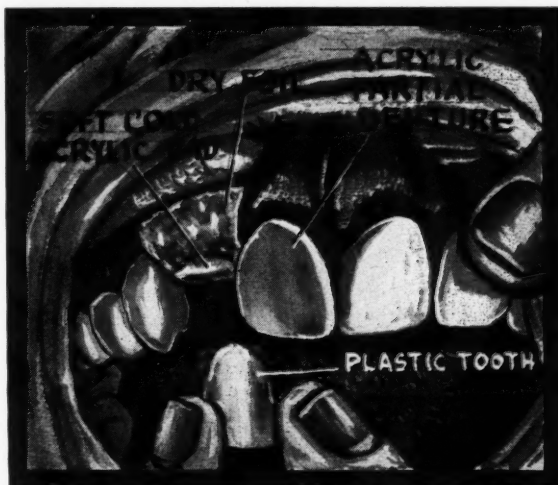


## SUGGESTIONS . . .

### Adding a Tooth to a Partial Denture

Paul J. Marcucci, D.D.S., Philadelphia

4. Dry foil covering the area of immediate extraction provides a dry and clean environment for the addition of a tooth to an existing partial denture directly in the mouth.

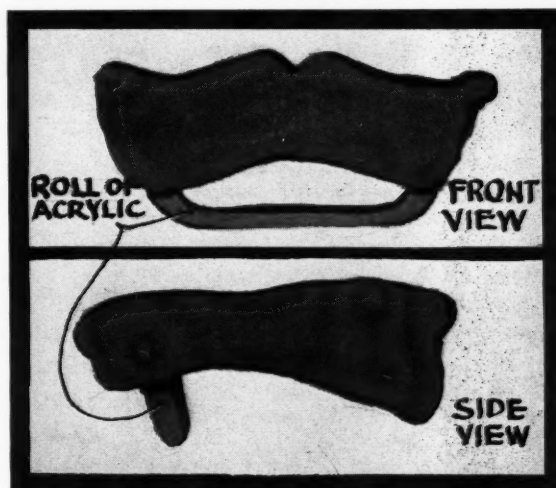


4

### An Impression Tray for Immediate Denture

George Goldfarb, D.D.S., Lancaster, New York

5. The addition of a roll of acrylic, the thickness of a pencil, to form a loop in the molar-to-molar area of the custom-made acrylic tray will facilitate the removal of the impression for an immediate denture.



5

### Prevent Slipping of Motor Foot Control

Bruno B. Kielich, Jr., D.D.S., Eggertsville, New York

6. Slipping of the dental motor foot control on polished floors may be prevented by spraying the underside of the control with a rug antislip preparation.



6

technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time. Turn to page 92 for a convenient form to use.

Send your ideas to Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.



## Poison Ivy

The most common causes of allergic contact dermatitis in the United States are poison ivy and poison oak. The two plants are closely related and produce identical eruptions. Poison oak is a Pacific Coast species.

The dermatogenous sap is contained in resin canals of the plants. Since the canals do not reach the surface, dermatitis occurs after contact only if a leaf is bruised.

About one-half of young adult white persons have dermatitis after contact with bruised poison ivy leaves. The incidence of sensitivity is lower in darkly pigmented races. All persons, however, including Orientals and Indians, may become sensitive to *Rhus* allergens after sufficient exposure. Sensitivity gradually declines with age. Once lost, sensitivity is re-established only by a severe exposure.

Poison ivy may cause leukocytosis varying from 10,000 to 18,000 and eosinophilia of about 5 to 22 per cent. Renal tubular damage, the nephrotic syndrome, and glomerulonephritis may occur. Episodes of urticaria and dyshidrosis are occasionally seen and a few patients have leukodermia.

Poison ivy dermatitis cannot be prevented by washing with soap and water or applying barrier creams or detoxicants before exposure to the plant. Hyposensitization by the systemic administration of *Rhus* antigen is attainable to a limited but definite degree.

Sensitization cannot be prevented by oral administration or cutaneous application of the allergen. There is no specific therapy available for poison ivy. No topical agent is more effective than the usual dermatologic measures, such as compresses and unmedicated lotions and creams. Injections of *Rhus* antigen during acute dermatitis is irrational and hazardous.

Corticosteroids are the only systemic drugs that have a demonstrable effect on lesions. 100 milligrams of cortisone, 40 units of corticotrophin, or an equivalent amount of another steroid is given daily. Doses two or three times larger may be used for

# MEDICINE

## and the Biologic Sciences



the first one or two days. These drugs combined with usual therapy may be of some value.

Kligman, Albert M.: *Poison Ivy (Rhus) Dermatitis*, *Arch. Dermat.* 77:147-180 (February) 1958.



## Aging— Neurologic Changes

The neurologic problems associated with aging are extremely interesting. Certainly they are varied as evidenced by the profound changes noted in many middle-aged persons as compared to the few changes seen in many active persons in their 70's and 80's.

It is apparent that some neurologic changes occur with aging. Close examination reveals, however, that dysfunction does not always parallel altered structure. Thus the older person's pupil appears to be rigid, but the pupillary efficiency in response to light is constant from childhood to senium. Cerebral blood flow is not influenced by hypertension in old persons. It has been shown that the vasculature of elderly hypertensive patients can relax. In general, the

cerebral blood vessel response to test agents, such as aminophylline or carbon dioxide, is the same in young and old, normal and hypertensive, except that the response is less notable in the old.

Some alterations in neural function are apparent. Upward gaze may be limited. Muscle wasting may ensue from shrinkage of bulk of each fiber and diminution of total number of fibers, especially in small hand muscles. Tremors are often regarded as common in old age.

The threshold for light touch and for pain are definitely raised. There is blunting of vibratory sense and dulling of the acuity of perception, particularly seeing, hearing, and taste, so that presbyopia, presbycusis, and presbygeusia occur. The deep reflexes may be altered, particularly the ankle jerk, which may disappear because of loss of elasticity of the Achilles tendon. Many of the above changes are the results of involuntional alterations in muscles, tendons, ligaments, and periarticular tissue.

Some symptoms are the slow-down akinetic variety and are the little signs of the so-called parkinsonian state. They characterize the gesture, the attitude, the stance and the gait of the elderly person. The old man has a general flexion attitude. The upper arms are bent at the elbows and wrists while the hips and knees are held forward, slightly flexed. When such a person lies supine, his neck remains bent anteriorly, the so-called psychic pillow.

There is considerable poverty of motion, despite the fact that there is no paralysis. The old person seems to make as few movements as possible. The face is comparatively immobile and blinking of the eyelids is infrequent. When he wishes to look to one side or another, he moves his eyes first, then his head, neck, and shoulders. The quick movements of the young person are completely missing. Old people sit for long periods of time but they cross and uncross their legs, fold their arms, fidget with their hands or gaze around. Associated movements are merely reduced in amplitude and speed. This picture is completed by a characteristic slow-

ness of movement, even in such functions as eating or putting on clothing.

*Boshes, Benjamin: Neurologic and Psychiatric Aspects of Aging, Mod. M. 26:71-79 (May 1) 1958.*



### Acne Vulgaris

One of the most perplexing and challenging problems today is the management of the patient with acne vulgaris. The disease itself was poorly understood in the past. Much of the treatment was empirical. Even today there is no specific cure for the disease and treatment continues to be palliative.

Acne usually begins at puberty. Often, as a result, it is described as the stigma of the adolescent and is regarded as a normal physiologic process. In fact, however, the development of acne, the development of the comedone, pustule, and cyst must be regarded as pathologic.

There are multiple factors involved and many of these cannot be correlated. The shock organ of acne is the pilosebaceous apparatus, the plugging of which represent the initial and foremost event in the pathogenesis of the disease. The normal apparatus consists of a hair follicle containing a healthy hair, which may be either coarse or lanugo, and an attached sebaceous gland.

When functioning properly, sebum produced by the sebaceous gland from along the sebaceous duct, enters the neck of the hair follicle and then appears on the skin surface. It appears that proper drainage of sebum is facilitated by the presence of the hair. The normal flow of sebum may be impaired, with resultant plugging of the apparatus in one of the following ways: (1) loss of the hair from the follicle, (2) plugging of the follicular orifice by keratin, and (3) hypertrophy of the gland with relative insufficiency of drainage.

With the onset of puberty, many of the above mechanisms come into play. In the male, with increased testosterone production, hypertrophy of the sebaceous glands occurs. Likewise,

many of the lanugo hairs are shed and in those persons hereditarily predisposed, the follicular orifice is often plugged with keratin. In the female, the production of progesterone is apparently responsible for similar effects.

The clinical manifestation of the plugged pilosebaceous apparatus is a mass of keratin and sebum referred to as the comedo or blackhead. At least 70 to 75 per cent of both sexes show some evidence of acne at the age of puberty. Once acne has made its appearance it may persist for a variable period of time, usually extending through most of the teenage period. In many, the lesions are so minimal and transitory as not to be really troublesome. In the more unfortunate, the lesions are more widely spread, severe, and frustrating. The more severe the acne, the more difficulty is noted over a longer period of time.

*James, Kenneth W., and Tisserand, John B.: Treatment of Acne Vulgaris, G. P. 18:131-139 (September) 1958.*



### Modern Flight—Sinus Symptoms

Sinus symptoms from modern flight are most likely to arise when ducts between the nasal and sinus cavities are blocked, preventing the equalization of air pressure. Pain is relieved by inhalations and other conservative measures. Blocked passages are usually opened by surgical procedures.

Aerosinusitis or barotrauma is acute or chronic inflammation of one or more nasal accessory sinuses produced by differences between pressure in the atmosphere and that inside the sinus. Lining structures are congested and inflamed, and mucosal or submucosal hemorrhage may occur. Non-occlusive inflammation results from collection of mucous secretions in the ostia. The chronic obstructive type is generally severe.

In more than half of patients with chronic conditions the nasal septum is deflected. Often the middle turbinate is hypertrophic, with lateral impingement on the orifice of the nasofrontal

duct. Nasal allergy, upper respiratory infection, and polyps in the middle meatus are fairly common.

During ascent, the predisposing condition is basically in the sinus, ostium, or duct. In descent, the disturbing factor is in the nasal cavity or near the mouth of the duct leading into the sinus.

The main symptom is sharp, lancinating, nonradiating pain over the sinus, most frequent in descent but sometimes felt when going up or in either direction. The frontal sinus is most likely to be affected because the nasofrontal duct is long and tortuous with a small orifice. The maxillary sinus may be occluded in some patients either alone or with the frontal sinus.

Nasal obstruction or pressure over the sinus may be felt. Twenty-four or more hours after onset, blood-streaked mucus or sputum may be noticed. Other symptoms are blurred vision, lacrimation, swelling of the upper eyelid, rhinorrhea, and plugged ears.

Sinusitis may be associated with such changes as inflammatory or polypoid thickening of the mucosa or with fluid, blood, mucus, or purulent secretions in the chamber. A roentgenographic examination should be done at once and also several days later if symptoms and signs persist.

*Bear, Stanley H.: Sinus Symptoms Originating from Modern Flight, Laryngoscope 68:1057-1068 (July) 1958.*



### Infectious Mononucleosis

During infectious mononucleosis, the human energy shifts to defensive tissues, generally at the expense of skeletal structures. Activity should be restricted until the differential blood count is normal. Even in the third or fourth week of convalescence, overexertion may provoke complete relapse.

Mononucleosis should be suspected when a bizarre group of symptoms and signs are noted. A patient with an acutely inflamed respiratory tract

## CLINICAL AND LABORATORY SUGGESTIONS

(See pages 88 and 89)

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Explanation of Procedure:

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may have the disease if swollen lymph nodes are felt outside the drainage area of inflamed tissue, the spleen is enlarged, fever and systemic manifestations are prolonged, or empiric antibiotic therapy has no effect.

Lymphocytosis with an increase of typical lymphocytes to 20 per cent usually establishes the diagnosis. Results may become positive as early as the fifth day or not until the fourth or fifth week of illness. Reactions are sometimes elicited for only a few days. Also, while disease is waxing and waning, peripheral blood may be far from typical.

Some infections produce only vague, slight symptoms or none at all. These infections are discovered accidentally during a blood examination and require no treatment. Fatigability, a constant tired feeling, and muscular weakness may develop, alone, but usually with chills, fever, and malaise, symptomatic of a hypometabolic state. Anorexia and pain with swallowing may cause dehydration and electrolyte imbalance. The diet should be high in calories and protein and appetizing to the patient. Chemicals that relieve pain and apprehension are helpful.

The disease attacks chiefly the glandular tissue of the throat in about 85 per cent of patients. And widely diverse organ systems are affected in 15 per cent of patients. The most troublesome symptoms are fatigue and weakness.

Cronk, G. A., and Naumann, D. E.: *Treatment of Infectious Mononucleosis, Postgrad. M.* 23:605-611 (June) 1958.



### Amputation— Stump Pain

In an amputation stump, the magnitude of pain is related to the patient's threshold and his conception of what constitutes pain. Sensations may vary from pressure and burning to incapacitating pain.

Most amputees experience pain immediately after operation from the surgical trauma. Such pain is more  
(Continued on page 94)



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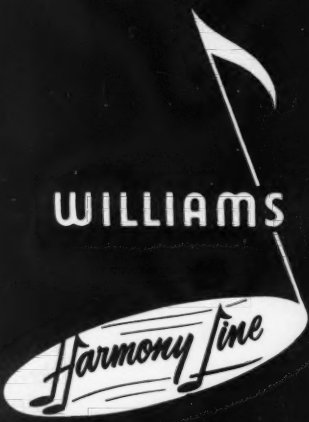
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severe than that occurring after other surgical procedures. Large doses of narcotics are usually necessary for several days. No sedation is generally required after a week to ten days.

Stump pain is experienced by most amputees at intervals for the remainder of their lives. Over 50 per cent temporarily discontinue use of prostheses.

The skin and tissue of the stump are not designed to bear weight and are vulnerable to stress and trauma. Blisters, ulceration, and painful cal-

louses are not uncommon, especially if the socket does not fit properly. Furunculosis also occurs frequently and is best prevented by daily skin cleaning with soap containing hexachlorophene. Stump sockets should be kept meticulously clean.

Bursitis may develop over any bony prominence from undue pressure. It is frequent and troublesome over the fibula if a soft socket is not used. Bursitis in above-the-knee amputation usually can be avoided by complete excision of the bursa about

the knee. Firmly established bursitis is also treated by excision.

Osteomyelitis may preexist or occur after operation. Treatment consists of chemotherapy, surgical drainage, and reamputation, if necessary. Osteoma at the bone end is not uncommon three to six months after amputation. The cause is obscure, although the incidence can be reduced by sharp incision through the periosteum with distal stripping and bone section just below the periosteal incision; saline lavage to remove bone dust; and avoidance of distal bone grafts. Osteoma may occur after reattachment of severed muscle to the raw surface of newly sectioned bone.

Neuromas are the commonest cause of stump pain. All peripheral nerves heal by formation of neuromas, which cause pain when adherent to bone, muscle, or surgical scar of the skin.

*Canto, Thomas J., and Bleck, Eugene E.: Amputation Stump Pain, U. S. Armed Forces M. J. 9:635-646 (June) 1958.*

### **Temporal Arteritis**

It is reported that in a series of 20 patients with temporal or giant-cell arteritis (1) a headache was a prominent feature in all; (2) tender and thickened temporal arteries in 19; (3) constitutional illness, anorexia, and fever in 16; (4) pain and stiffness of the jaws in 9; (5) painful neck in 9; and (6) pains in the muscles and limbs in 10. Twelve had had eye involvement, of whom three not treated with cortisone had become suddenly blind. The average duration of disease after biopsy in the patients not receiving steroids and in eight patients receiving steroid was 5.4 and 2.5 months respectively. This experience suggests that early biopsy diagnosis, followed by cortisone treatment, could shorten the disease and prevent blindness.

Adapted from *Lancet* No. 7053: 943 (Nov. 1) 1958.

# Contra- Angles

## he Couldn't Call for Help

POIGNANT story appeared in the newspapers before last Christmas. It is the story of a 12-year-old, 75-pound little girl who was criminally assaulted and then murdered by a 17-year-old boy. Although these sex crimes are depressingly common this story was particularly horrible because the little girl was a cleft palate cripple.

The father of the little victim testified at the coroner's inquest that she was withdrawn from the world and unhappy because other children made fun of her. This is the same pitiful story: the cruelty of children to the afflicted and the sensitiveness of the crippled. Anyone who has heard the taunts and jeers directed by children against the deformed and crippled knows the heartaches that must follow. Children are not the only ones who are cruel. We have all heard people who were adult in years, but not in maturity, make fun of the distorted speech of the cleft palate victim.

Although there are fund drives for almost every conceivable disease, congenital and acquired, even the people who administer the affairs for crippled children and adults do not seem to understand that crippling is an affliction that may deform other parts of the body—it is not an affair of arms and legs alone. So far as I know there is no national foundation that raises money for the rehabilitation of the cripple with a cleft lip or palate. This condition of indifference exists despite the fact that one out of every 100 live births produces a child with such deformities.

With the exception of plastic surgeons, dentists have done more to

(Continued on page 96)

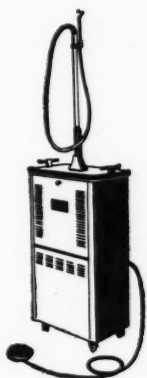


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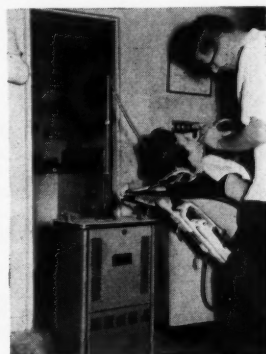


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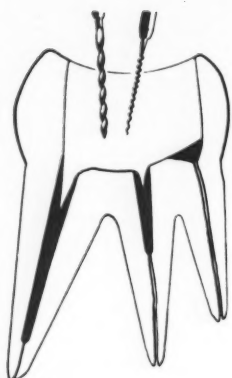
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rehabilitate cleft palate cripples than have any other members of the medical team. The late John Fitz-Gibbon, the present-living Herbert Cooper and Cloyd Harkins have dedicated their lives, their skills, their money to aid cleft palate sufferers. These three men are dentists.

Although we give away billions of dollars throughout the world in foreign aid, for which we purchase a full measure of contempt and distrust, the government gives little for cleft palate rehabilitation. Fitz-Gibbon, Cooper, Harkins, as examples, spent their own money to establish clinics for treatment. After their enterprises had proved their humanitarian merits a few generous private contributors aided in the efforts. Government funds have been niggardly granted by State government—if at all.

What is a dentist likely to be told who expresses an interest in this work for cripples? He is likely to hear the realistic view that if he devotes himself to this kind of therapy he will be doing it for soul-satisfaction rather than for money. There is much more to be earned in regular orthodontic and prosthodontic practice than in the effort that is directed toward rehabilitation of the cleft palate victim.

As Herb Cooper has proved and has shown in the new American Dental Association motion picture, "Pattern of a Profession," the cleft palate treatment is a team effort: the plastic surgeon, the pediatrician, the orthodontist, the prosthodontist, the speech therapist are included. No one of these specialists working alone can do the job effectively. Such a coordinated effort requires the physical resources of an adequate building. It also requires technicians, nurses, and other personnel. Set up against these large capital and operating expenditures is the fact that most of the people who require this specialized care cannot afford to pay enough in fees to keep such a clinic in operation. There are only a few philanthropists like Elmer H. Bobst who have given generously for the restoration of the crippled of face, speech, and spirit.

It would seem that a government that spends so prodigiously (and often unwisely and with enormous

waste) in billions for foreign aid could support rehabilitation for its own people. The little crippled 12-year-old girl might have been one of those saved for a fuller life.

## Do These Words Sound Familiar?

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Do these words sound like something on dental technique that you might read "up front" in this magazine? They did to me, but they were written by a neurosurgeon in the *British Medical Journal*: "Acrylic Investment of Intracranial Aneurysms."

We should be pleased that our neurosurgeon friends and colleagues think well enough of dental techniques to adapt them for their own surgical procedures.

## Telling the Patient

A dear friend of mine when he knew that he was dying of cancer said that he was sorry for his physician who found it so hard to tell him the truth: that the life of my friend was doomed. This is an emotional dilemma that faces the physician so often. In a lesser degree it is something that the dentist confronts on occasion—when he is required to tell a sensitive young woman that she must lose her teeth.

We are aware that the principles of psychosomatics operate in virtually every condition of disease. We also know that human beings are variable in their reactions from the neurotic



who can face nothing to the stoic who can confront anything. It would be good fortune if all of us could be so prescient as to be able to place people into the categories from one extreme of reactiveness to the other and include all the varied types in between. That would be expecting much from the power of understanding; that rarest of gifts and the one that the philosophers of all ages place highest among the possessions of man.

As a guide to better understanding of the patient in distress and of his values Sir Robert Platt, president of the Royal College of Physicians, suggested three categories of patients:

- 1) "those who wish to face the facts and should be allowed to do so;
- 2) "those who really know the truth but prefer not to discuss it, either because they wish to avoid embarrassment to the doctor or because they prefer not to have their fears confirmed and would rather be left with a chink of hope;
- 3) "and those who do not want to face the facts and are often patiently trying to conceal the truth from themselves and often from the doctor."

I doubt if any of us would have a major objection to this classification. It is something else, however, to put this neat and orderly arrangement into functional use. How do we know what lies in the heart and mind of any other human being? At best we see only the surface of another's soul. The fears, the hopes, the anxieties that lie submerged are not for us to see or comprehend. How much do we know or understand about ourselves?

I prefer the view expressed by that noble physician and author, Oliver Wendell Holmes, to the pat and superficial classification of Sir Robert.

Over one hundred years ago Holmes said to a group of young physicians about to enter the world of their profession:

"Beware how you take away hope from any human being. Nothing is clearer than that the merciful Creator intends to blind most people as they pass down the dark valley. Without very good reason, temporal or spiritual, we should not interfere with this kind arrangement."

—E.J.R.

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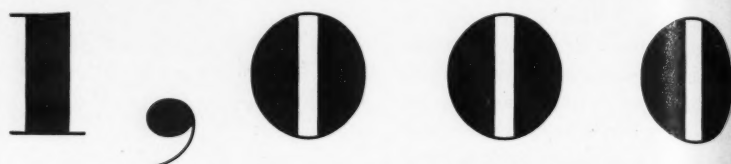
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